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ORIGINAL ARTICLES.

PERIPHERAL NEURITIS. A CLINICOTHERAPEUTIC RESUME.

BY WILLIAM BROADDUS PRITCHARD, M.D.,
OF NEW YORK;
ADJUNCT PROFESSOR OF NERVOUS AND MENTAL DISEASES, NEW YORK POLYCLINIC; CONSULTING NEUROLOGIST, S. R. SMITH INFIRMARY, STATEN ISLAND.

THIRTY years ago, neurology was a comparatively unexplored by-path in the Mammoth Cave of medical research. Within thirty years, such gigantic strides have been made in this field as to make the net results of today seem almost miraculous. Brilliant as have been the achievements in localization, in brain surgery and in neuro pathology, no chapter in all this history is more marvelous in the sum total of practical results than that devoted to the study of neuritis. Beginning with the researches of Duchenne there followed in quick succession the investigations, clinical and laboratory, of Dumenil, Joffroy, Pitres and Vaillard, Bury, Leyden, Bowlby, Ross, and a host of others, the net result of which is a definite conception, with a correlated working basis, which places the subject unquestionably within the field of positive medical activities. We enter this domain of medicine today with the same confidence and assurance which marks the portals of surgery, gynecology, dermatology or any other special subfield of medicine. Because of the tremendous dimensions of the unrestricted subject, I shall limit myself to a consideration of the strictly clinical and therapeutic aspects of peripheral neuritis alone, leaving out of consideration altogether, the very inviting and interesting and important subject of multiple neuritis and also all questions of pathology and morbid anatomy. We shall find quite enough material in this restricted field to occupy your attention to the limits of tolerant patience. I have selected as the basis of what I shall have to say, the carefully recorded histories of six patients, taken from my case books. These patients represent six different clinical types of peripheral neuritis. These selected cases it should be remembered are more or less typical. The atypical and the anomalous should not be forgotten. I have endeavored in this paper to adjust general experience to individual variations and exceptions, as far as possible, but have quite probably fallen short in a relative estimate of the importance of the personal equation in every case of nerve trouble. The harm is less if you remember the acknowledgement and the implied emphasis which such acknowledgement places upon the fact.

Neuritis of the Seventh (Facial) Nerve.—This form which is very common, is attended with more or less marked motor paralysis, and is much more familiarly known as Bell's palsy. Other synonyms are rheumatic facial paralysis and car-window paralysis, the latter term being especially significant as to a frequent etiological factor, exposure to direct cold. The nerve is quite superficial in part of its course anatomically and but poorly protected from either trauma or cold. The importance of this form of neuritis is esthetic or cosmetic, and somewhat a matter of sex, rather than vital. In cases which do not recover the facial deformity from atrophy and asymmetry is almost tragic, if the patient be a woman. With face twisted awry, drooping, dribbling mouth angle, staring lagophthalmus and wasted muscles, the feminine victim of this form of neuritis, if it prove vicious, is a martyr indeed, and not very charitable, either, in her criticisms of the doctor who treated her, especially if she finds that he has been incompetent or negligent.

The most important first consideration in facial paralysis is the question as to whether the lesion is central or peripheral. If central, the case is infinitely more serious. Fortunately a mistake here is rarely made and is practically never excusable. In the central (brain) cases, the upper branch is infrequently affected, and if at all, only transiently, as a rule, and slightly. It is very uncommon for a cerebral lesion to pick out the facial center alone, sparing all others. If central and of the right face, there is almost necessarily aphasia in some degree and usually, even in lesions quite limited of the central or subjacent white fibers, there is associated implication of the arm of the same side, or of the arm and leg. Lagophthalmus is rare in the central cases, and so also is atrophy, though this latter fact is of less immediate importance, as it does not develop in any case until after a varying interval and the differential diagnosis must be made at once. The mode of onset is quite different, the central cases developing with apoplectiform symptoms, or at least with some general manifestations of cerebral disturbance. In the peripheral cases the patient quite often first discovers the paralysis on looking into a mirror, or from an unexpected dribbling of fluids in attempting to drink, or from an inability to whistle. The triple distinction of supranuclear, nuclear and terminal facial palsy is less vitally important though scientifically desirable. There is rarely, if ever, any sensory disturbance, unless the fifth nerve is simultaneously affected. This association paralysis of fifth and seventh is comparatively rare, although I have seen perhaps half a dozen examples.[1] It is quite often due to syphilis, which is very rarely a cause of Bell's palsy and is easily recognized by the additional symptoms of hyperalgesia and hyper-

* Read before the Richmond County (N. Y.) Medical Society, Nov. 11, 1903.

esthesia, followed by analgesia and anesthesia and by active and early trophic symptoms, particularly neurotrophic ophthalmia.

It is sometimes of importance to determine at what point the lesion in Bell's palsy exists and there are various signs, dependent upon the implication of certain branches, by which the anatomical extent of the disease can be determined. The prognosis, and to some extent, the conjectural etiology is dependent upon such determination. Practically it is sufficient to say in this connection, as regards prognosis, that if the analysis of symptoms points to a lesion outside of the stylo mastoid foramen, the prognosis is much better than if the lesion is within.

Case I.—A. B., aged thirty-six years, female, housewife, thin and anemic, family and personal history negative. Three weeks ago took an afternoon nap exposed to the draught of an open window. On waking noted a sensation of peculiar awkwardness and stiffness of left side of face, and on taking a look at herself in the mirror, found her face twisted awry, the left angle of the mouth drooping, with inability to close down the left eyelid (lagophthalmus). Three days later she reported at my clinic, and the following facts were noted. Motor paralysis, left side of face, all branches, no action of left corrugator supercilii, droop at left angle of mouth, some impairment of sensation of left side of tongue anteriorly (chorda tympani), hyperacusis left ear and no action of muscles of palatine arch, left side, on forced vocal expiration (requiring patient to say "Ah"). There is no disturbance of skin sensation, of the action of the ex- or intrinsic muscles of the eye and no implication of the arm or leg of the same or of the opposite side. The diagnosis is that of Bell's palsy, lesion within stylomastoid foramen, probably as high as the geniculate with a prognosis of recovery after two to four months active treatment. Considerable progress toward recovery has already occurred and she will ultimately and in all probability within the time limit already designated, make a good recovery, under the following plan of treatment: The face is massaged daily with inunctions of lanolin; the patient takes three doses daily of strychnine gr. $^1/_{25}$, quin. sulph. gr. I, and sodii salicyl. gr. III, to which is added 5 gr. doses of Blaud's mass and three times a week she is treated with galvanism. An Erb neck electrode 2 by 4 is applied back of the neck and to her left face is applied a flexible, adjustable Erb electrode, 2 by 4. Five to seven milliampères are introduced through the rheostat, and the seance lasts from ten to twenty minutes. Daily seances would hasten the result, and in obstinate cases, alternate seances with the interrupted current roller electrode or faradism, with a current of high tension, will prove advantageous, especially in controlling atrophy. It is at times of distinct advantage to use in these cases small doses (5 grs. t.i.d.) of potassium iodide. It seems scarcely necessary to add finally that in this patient's case all local etiological factors, such as aural or dental, or nasal disease, affections of the antrum and other similar conditions which would, if present, materially affect the treatment, have been excluded. An obvious etiology in any such local cause, invariably demands, of course, appropriate treatment.

Neuritis of the Sciatic Nerve, Sciatica.—The history of this case is as follows: In March, 1893, an attack of grip with severe throat and bronchial symptoms,[2] was followed immediately upon the subsidence of febrile symptoms by a sensation of tired, aching pain and quick fatigue in the right leg, the pain following the course of the sciatic nerve. A trip South relieved all symptoms except those involving disability and pain in the right leg. This leg became easily and quickly tired from any exertion and constant aching pain, plus a variety of abnormal sensations, numbness, tingling "pins and needles" and other paresthesia, developed. At home, at the theater, in church, anywhere, where the position was constrained, he felt this pain and these paresthesiæ. In May he presented the following symptoms: Pain, intensified by pressure, along the course of the sciatic nerve of the right leg, especially at the popliteal space and at the outer aspect of the ankle; slightly diminished power and some anesthesia in the area of cutaneous distribution; beginning atrophy as indicated by contrast measurements of the two legs which showed right middle thigh 17½, left 18½; right calf, 15¾, left 15¾; right ankle, 7⅛, left 7⅜. Bearing in mind the normal reversal of these measurements as between right and left, the continuous pain in an anatomically limited area, the paresthesiæ and other subjective symptoms, as well as the etiological history there was no hesitation in arriving at the diagnosis of sciatic neuritis, from infection. The following plan of treatment was at once inaugurated: Functional rest, as far as possible, the internal administration of quin. sulph. gr. I, strychnine sulph. gr. $^1/_{30}$, and arsenious acid gr. $^1/_{50}$, t.i.d., with electricity in the form of galvanism, 5 to 10 milliampères daily, through the largest size Erb electrodes, one under the right foot, the patient sitting upon the other, the buttock being protected by a thick covering for the electrode. Daily massage, with lanolin as the emolient, was employed, very gently at first, all Swedish movements being avoided. Special importance was attached in the technique of electrical treatment, first, to a position of bodily comfort and non-restraint during the seance; second to a diffusion of the current by means of large electrodes; and third to an avoidance of shock or irritation effect by the invariable use of the rheostat. The meter should always be the guide as to quantity. This patient has practically made a complete recovery though still able on damp humid days, or after unusual fatigue, to tell the right leg from the left. Such a result, while by no means exceptional, is equally by no means the fixed rule. Sciatica is quite often a most obstinate affection and much more radical measures are often imperatively necessary.[3] The patient must be put to bed and

even more radical measures employed to enforce total physiological and functional rest. The long hip splint may be advisable. When applied, it should be adjusted so as to permit of the application of hot or cold (ice) bags along the course of the nerve or of actual cautery, a measure which is almost magically effective at times, especially if used early. With the patient in bed, the limb in a splint and a chain of ice or hot water bags as a cushion for the affected leg, acute suffering is often kept under control without more direct medication. Should drugs be necessary, as they often are in severe cases, do not waste much time with coal-tar analgesics or other compromise measures, but use morphine at once, hypodermically and in effective doses. It is infinitely more certain than the cocaine or osmic acid or water injections or needle punctures, variously recommended by Corning, Solis-Cohen, Bartholow, Starr, and others, and there is the further advantage that morphine need not be injected locally, whereas the other agents mentioned are dependent for effect upon a local and direct action, a procedure not without danger, as shown by the experiments of Pitres and Vaillard who have reported several cases of acute traumatic parenchymatous neuritis, the result of the employment of these methods. Phenacetin, antipyrin and other kindred drugs are sometimes transiently ameliorative, but disappointing in permanent effect. The salicylates, colchicum and the iodides are equally disappointing even when an associated rheumatic diathesis is evident. The sulphur pack, the castor oil plan and other empirical methods are always experimentally legitimate, especially in obstinate intractable cases, when the question of surgical interference by means of nerve stretching, section or other operative procedure forces itself upon your attention. In this connection, let me urge upon you, as a result of personal experience and a somewhat critical observation, the most extreme conservatism. Among other experiences, invariably disappointing and disastrous, I cannot easily forget a suit for damages which I once narrowly escaped. I had advised nerve stretching, as a last resort, in a most intractable sciatic neuritis. A very competent surgeon stretched the nerve by the open (operative) method, with the result that a painful disability became an absolute paralysis, and for many months the patient was dependent upon crutches for locomotion, the pain being no less, the last state of that man being infinitely worse than the first. Stretching the nerve by forcible flexion of the thigh upon the abdomen is less dangerous, but quite painful, requiring an anesthetic. Do not forget in all cases to examine the urine for diabetic or gouty states or lead, the blood for malaria and other parasites, the pelvis for tumors, uterine disease or other sources of intrapelvic pressure, the bones for hyperplastic inflammatory disease, the local blood-vessels for aneurisms or varicose dilations, any of which conditions may cause or aggravate a sciatica. Reflex irritation is infrequent, but one of the most severe and intractable lumbosacral neuralgias I ever saw was due to an undescended constricted testicle. Flatfoot may induce symptoms closely simulating sciatic neuritis, and I have known appropriate orthopedic treatment, or a change in the style or make of a shoe, to effect a cure quite promptly. In considering surgical measures, it is always well to bear in mind the vis medicatrix naturæ. A waiting policy quite often pays better than aggressive surgical interference.

Intercostal Neuritis.—Male, aged fifty-four years, of French ancestry and a most restless, nervous temperament. Thin, sallow, cadaveric almost in malnutrition, he tells a tale of marvelous endurance in various experiences. You know the type, the man "lives on his nerve." Now and then such men break down, usually mentally, sometimes motorially, less often sensorially. In this case, as in all therapeutic neurology, the equation of temperament, the nervous personal equation, is tremendously important, though often overlooked and quite as often misinterpreted. This patient tells me he has suffered from two previous attacks of neuritis, both involving the brachial plexus, one attack eleven years ago, the second five years later. I find from urinary analysis an intensely lithemic state. The specific gravity is 1.032, no sugar, but urea in extraordinary excess, 16 grs. to the ounce. There is also an excess of indican and microscopically, crystals of uric acid are abundant. Renal cells, traces of albumin, a few leucocytes and a few blood cells, with much mucus, are present as evidences of the mechanical irritant effect of these deposits. We know from pathological findings, that similar mechanical deposits within the nerve sheaths are not infrequently responsible for inflammatory interstitial affections of the intercostal and other nerves, an hypothesis which has always appealed to me. This patient's present attack developed three weeks ago. He was out fishing, got wet and wore his wet clothing for several hours. The following morning, he awoke with a stinging, burning pain in the right side, at the level of the sixth rib. The sensation was that of a red hot wire running under the skin from the middle of the back to the median line in front. Within twenty-four hours an eruption developed, linear in distribution and vesicular in character, corresponding to the line of pain. It looked like a line of angry blisters. The local physician, who was called in, made the diagnosis of "shingles" correctly, but failed to recognize the neurotic basis, and treated the case from a strictly dermatological standpoint. Salves, ointments and washes failed of relief, and the sufferings of the patient grew more intense. I was called in consultation at this stage. Aggravated insomnia, loss of appetite and extreme emotional instability and irritability had been added to the picture secondarily. Absolute rest in bed, gentle massage, forced feeding and galvanism were ordered and the following prescription was directed to be given every four hours: Sodii salicyl. gr. III, quin. sulph. gr. I, codeine gr. ¼. A lining of lamb's

wool fleece, which is rich in lanolin, was ordered to be basted as a skin side lining to the undershirt, over the affected area. A hypnotic powder of ten grains each of trional, sulphonal and sodii br. was ordered given in hot milk at bedtime. All symptoms, forty-eight hours later, were found to be worse. The nervous irritability, which was most intense and general, made the wool fleece intolerable, an uncontrollable motor restlessness rendered the rest plan impossible and the hypnotic had not only failed as an hypnotic, but had been followed by a collapse depression which was almost alarming. Electricity and massage had both apparently aggravated the neuritic pain. I changed tactics at once, abandoned the wool fleece, discontinued the electricity and both prescriptions, ordered champagne every two hours, and a prescription containing caffeine gr. 1, strychnine sulph. gr. $^1/_{25}$, quin. sulph. gr. 1, in capsules, one every three hours, modified rest, forced feeding to be pushed more actively, and the massage continued. The effect was almost magical. The patient began almost immediately to improve and within a day or two, was sleeping well, eating well and practically free from all pain. Although still annoyed by various hyperesthesiæ as well as hyperalgesiæ in the area of the affected intercostal, he has since made a complete recovery. Unless employed at the very beginning, local measures such as blisters, poultices, ice, thermocautery, leeches, menthol and ether sprays and anodyne salves and ointments are worse than useless. Promptly employed, some of them sometimes may arrest further progress, practically aborting the attack. If not effective within forty-eight hours, further continuance is at least negatively harmful.

I have never found any advantage from applications of galvanism through the bare metal electrode recommended by some authors. Indeed, this method is much more often positively harmful. Strapping the chest is at times beneficial, but not often necessary, and always very uncomfortable. The selection of the left rather than the right side is rather remarkable in these cases, and of some importance, especially in aged patients, in that in such cases it is quite imperative that angina pectoris in any form shall be excluded. So-called mastodynia in women is often, if not always, a variety of intercostal neuralgia or neuritis. Pleurodynia is usually easily differentiated.

Neuritis of the Fifth Nerve, Trigeminal Neuritis, Tic Douloureux.—Patient No. 4 is the victim of one of the most vicious and at times intractable forms of neuritis, known as tic douloureux. Painful spasmodic disease of the trigeminus is a competent definition. Although taxing your resources at times to the utmost, it is at the same time often a most fascinating prognostic and therapeutic problem. The etiology is exceedingly varied; sometimes it is due to trauma, again to cold, sometimes to infection as from erysipelas, aural disease or abscess. In other cases the cause is constitutional and the disease becomes one of the numerous nervous manifestations of the uric acid diathesis, of malaria, of gout or of diabetes; exogenous intoxication as from lead, alcohol, opium and arsenic may be the causative factor in special cases. Arterial degenerative disease such as atheroma or fibrosis with associated nutritional disturbances is a very common cause explaining the extraordinary frequency with which the disease occurs in the aged. Why females should preponderate numerically is not so easy of explanation, though none the less a fact. Perhaps the factor of broad diminished neurological resistance is a sufficient explanation. I find in examining my records that excluding traumatic cases, the females as compared with males are as three to one. I find also from the same records that 60 per cent. of my patients were past the age of fifty years. Quite often in these patients there is disease of the kidneys with resultant insufficient sewerage and non-elimination of toxins, and it is sometimes difficult to determine the exact etiological and allied therapeutic significance of the urinary findings. The urine should always and frequently be examined in all cases of tic douloureux, especially in the aged, and the findings should to some degree, at least, influence the treatment and prognosis. Blood analyses, especially for infectious or parasitic invasion should constitute a part of the routine study of these cases. Local conditions, such as carious teeth, alveolar disease, disease of the antrum, exostoses, malignant growths, suppurative disease of the ear or of the frontal sinus, of the nasal cavities or of the orbit are occasionally found to be causatively related directly or indirectly to this affection. Just here let me refer with emphasis to a fact of great importance in its bearing upon both prognosis and treatment in this and all other sensory neuroses, and indeed in all the neuroses, motor and trophic, as well as sensory. Incidentally I might add that to an even greater degree in importance as a fact does it apply to the psychoses; *nerve function especially when perverted is peculiarly prone to habit tendencies. Starting in some local, definite cause or in some equally positive constitutional state, a neurosis, motor, sensory or vasomotor, quickly develops a habit tendency which results in a continuation of the neurosis after the cause shall have ceased to act or shall have been removed surgically or otherwise.* Examples are both numerous and familiar in every day general experience. A fifth nerve neuralgia may begin from a carious tooth. Let the tooth remain for a few days, then extract it; the neuralgia should disappear at once upon the removal of the cause. Sometimes it does; quite as often it does not. The result, the effect, has to be treated as an entity, independently of the cause. Epilepsy, especially the traumatic variety, affords another example in point. Let a given epilepsy be due to direct local irritation at a certain circumscribed point by a definite lesion such as tumor, spicule of bone or clot. Let such local cause remain for a few weeks or months, then remove it with the

utmost nicety of surgical skill and precision. The positive cause having been removed, the resultant effect—epileptic attacks—should cease, but do they? In my experience, a large one, the epileptic attacks continue as often and as severely as before in a large majority of cases, and quite often the original condition is intensified. The same reasoning and experience and facts apply with equal importance to the tics. I have seen spasmodic torticollis originating in a local condition continue after such causative condition had been removed by a tardy operation. In reflex choreas excited or aggravated by local states such as adherent prepuce, nasal disease, etc. I have found it invariably necessary to treat the neuroses specifically after the exciting cause had been removed. In my experience there is no exception to this vicious habit tendency in all the neuroses. It is this fact which to my mind sufficiently explains the limitations of surgery in neurology as a means to the end of cure.[4] Remove the spicule of bone or the tumor or the clot in epilepsy, have the carious tooth extracted in neuralgia, circumcise in phimosis, free the adherent clitoris, remove adenoids, operate for nasal stenosis, correct the astigmatism or the eso- or exophoria in chorea or migraine but do not promise a cure from such procedure, and do not neglect the routine treatment which would apply in the idiopathic (so-called) cases. You will lessen the reproaches of conscience, and more important still, the reproaches of clients. In the treatment of tic douloureux the recognition of this habit tendency has a twofold therapeutic value and significance. First that already indicated in the preceding paragraph which bears particularly upon this affection because of the frequency with which the surgeon in this disease enters the domain of neurology. Nerve stretching, nerve section, or the more extreme and radical operation of Hartley or Krause is quite common. From personal experience, as well as a careful, conservative study of statistics, I desire to go on record as protesting most energetically against such procedures, one and all, except in most carefully selected cases, and always as a last resort, all other methods and measures having been faithfully tried and the worst results from operation being discounted by a worse condition beforehand. Be sure first that your patient has had the benefit of a trial of every other method and specific, empirical or otherwise, and sure that his condition cannot be made worse, no matter what the outcome. In all cases promise no more than this. You will find yourselves wise and fortunate in a direct ratio to your observance of this advice. Surgery to be effective, must be prompt and must anticipate habit tendency. Extirpation of the Gasserian ganglion does cure the pain, but at what risk and at what cost? There are many plans of treatment in this affection, any one of which may succeed in individual cases. A careful study of the personal equation as indicated in heredity, environment, temperament, physical habits, etc., may be and usually is decidedly helpful in determining the special plan you will follow in a particular case. Some patients bear anodynes badly, others are intolerant of stimulants. Assuming that you have eliminated local causes, constitutional states and reflex irritations, or that you have properly discounted them by treatment or otherwise, and your patient is still unrelieved, several more or less empirical plans remain. First as to the castor oil plan. I do not know how it proves effective, and your explanation is as good as mine, so we will not exchange theories. Daily doses of an ounce or two have occasionally been followed by relief. So far as I know no special indications exist which afford a guide as to the appropriateness for this method. If all other more legitimate methods fail, it should be tried. Dana's treatment with rapidly progressive and massive doses of strychnine I have found in a few cases marvelously happy in results. It should always be given a trial. The patient should be put to bed on a full nutritious diet with milk-cream mixtures as a special and forced feature. The strychnine should be given first—preferably hypodermically—in doses of $^1/_{40}$ gr. every four hours, the second day $^1/_{30}$ every four hours, the third day $^1/_{20}$, the fourth day $^1/_{16}$, the fifth day $^1/_{12}$. If no result is obtained by the end of the fifth day, it is useless and sometimes dangerous to pursue this plan further. I recall two cases, one referred to me by Dr. T. Kelley, treated at the Polyclinic Hospital, the other referred to me by Dr. Charlton Wallace, both promptly cured by this plan when everything else had failed. In both of these cases I was consulted, if I remember correctly, as to the method of operation and the selection of the operator, hope of relief from any other method having been abandoned.

There are other measures which may be tried of less constant or probable value, including aconite, gelsemium, colchicum, potassium, iodide and other drugs. I shall not burden you with presumably familiar details. My own plan, for which I claim some originality in conception, is as follows: Assuming all local and constitutional predisposing and exciting causes to have been properly antagonized and all clearly indicated etiological plans of treatment in individual cases to have been tried and found wanting, I adopt the following more or less specific course: First as to electricity. I always use galvanism and the continuous current introduced and withdrawn through the rheostat and guided as to quantity by the meter. One electrode, it makes no difference which, is applied back of the neck, the other (pliable, flexible) over the face affected. Both are bare Erb electrodes covered with wet towels thickly folded. Both electrodes should be as large as possible, diffusion of current at the contact surface being desirable. Irritating shock from interruptions or excessive currents should be avoided always and in all forms of painful neuritis. Two or 3 milliampères very gradually increased to 4, 5, or 6 for five minutes, the séances gradually lengthened to twenty or thirty

minutes, will be found to be safest and most effective. Mild currents with long seances is a safe general rule. Following this treatment the face is massaged gently with lanolin, and in several painful cases I have advised a face mask or hood to be worn day and night, lined with lambs wool fleece. With a full faith in my belief as to the importance of neurotic and neuritic habit tendencies, I apply this faith in works along the lines of the following theory and plan: Facial painful tic is primarily a disease of the fifth nerve. Very soon a sympathetic or associated implication of the seventh is induced through which the motor tic is added. The seventh forms the habit of ticking, so to speak, and this in turn keeps up the painful irritability of the fifth, a vicious cycle being the result, cause becoming effect and vice versa. Removal of the original cause of the painful neuritis of the fifth which started the motor tic of the seventh not being sufficient to break up the tic habit, I begin on the motor habit. I put the patient upon full doses of hyoscine hydrobromate, gr. $^1/_{100}$ to gr. $^1/_{50}$ twice or three times daily. I stop the tic by this means, and eliminate the continued source of irritation of the sensory fifth nerve. After controlling the tic, I attack the painful neurosis with one of the following combinations, Rx. sodii salicyl. gr. III, quin. sulph. gr. I to II, codeine gr. ¼ to I,—one such every three, four or five hours, or Rx. sodii salicyl. gr. III, heroin gr. $^1/_{10}$ or heroin alone, gr. $^1/_{25}$ to $^1/_{10}$ or codeine alone gr. ¼ to gr. I, or even two grains. The anodyne is reduced rapidly within a few days, and I then put the patient upon an active constructive tonic, always containing strychnine. I have tried various mechanical measures to control the tic, strapping the face with adhesive strips, painting it thickly with collodion, etc., in the effort to secure immobility, but with only occasional success. All such measures are inferior to the hyoscine. Gelsemium, colchicum and other similar drugs of ancient vogue act, when they act at all, through the same principle, in my belief, rather than specifically, and all are inferior, in my experience, to hyoscine. I have the records of four cases of tic douloureux in which this plan proved successful, almost every other method having failed to even alleviate. I have withheld details as they would needlessly lengthen this paper and additionally for the reason that they constitute the basis for a separate paper in preparation upon this special subject. Let me say in conclusion that it is in no one measure but by the careful observance of all details that the best results are obtained in the treatment of this affection.

Traumatic Neuritis.—A. B., aged forty-four years, American, merchant, of negative family and personal history. On February 16 last, in attempting to board a rapidly moving car he was jerked violently from his feet, still retaining his right hand grip upon the guard rail. Regaining his footing he jumped on the car, and in a violent rebound struck his right shoulder forcibly and viciously against the iron upright of the gate. He felt a severe local pain and tenderness immediately over the deltoid area, but not until two days later, the symptoms persisting, did he seek medical advice. Unfortunately either a superficial examination or a deficient knowledge led to the opinion that the entire trouble consisted of a muscular strain, with the correlated advice to use counter-irritant liniments, etc. Two weeks later his suffering and disability having steadily increased, he was referred to me. All discoloration and swelling had disappeared. Pain and tenderness on pressure over the acromion process and just over the joint anteriorly existed. The pain extended down the arm in a line along the outer surface, chiefly in the distribution of the circumflex to the elbow and below in the area of the ulnar. No pain below the wrist, but numerous paresthesiæ, particularly tingling and formication in the little and next finger. The response to the electric current was of the irritative character, but the polar formula was normal, no reaction of degeneration being present. There was considerable limitation of motion from pain and some actual diminution of power in the deltoid elevators and in both flexors and extensors of upper and forearm in resisting forced movements, with slightly diminished hand-grasp and slight beginning atrophy. The patient insisted upon attending to business daily, but agreed to wear the arm in a sling—my object being to thereby keep him constantly reminded not to use it. A lining of lamb's wool fleece was basted to the sleeve from the shoulder to wrist and daily massage inunctions of lanolin were ordered. A prescription each dose of which contained codeine gr. ¼, sodii salicyl. gr. III, quin. sulph. gr. I, was directed to be taken every four hours. Daily treatments with galvanism, one electrode 2 by 4 heavily protected back of the neck, the extended hand resting comfortably on the other (same size) was instituted. For the first three or four treatments a current of 3 or 4 milliampères carefully introduced through the rheostat was employed, the séances lasting some twenty minutes. Gradually, as the pain diminished, the current was increased to four, five and finally to ten milliampères. This patient was tardily responsive and seven weeks was required to effect a cure. Even now, as is often the case in neuritis, by the way, he is quite disagreeably reminded of past experiences after any unusual or depressing exertion or fatigue or by certain humid barometric and atmospheric conditions. In many cases for years afterward the victims of neuritis, toxic or traumatic, can foretell a storm with quite as much uncomfortable accuracy as the chronic rheumatic, and overexertion or fatigue from any cause brings a reminder in a sciatic ache or a brachial tire.

One aspect of this last subject demands special consideration because of its medicolegal bearing and importance. Traumatic neuritis the result of street-car and other accidents is an exceedingiy common allegation in bills of particu-

lars in suits for damages. It is next, perhaps, in frequency to so-called railway spine. A large proportion of these cases are fraudulent, of course, but by no means all. It is quite as important in the interests of justice and humanity to protect the honest litigant as to expose the fraudulent malingerer. There are several quite nice points of diagnosis with which you should be familiar. In the first place the very important fact should not be overlooked that subjective symptoms are relatively valueless especially if unsupported by objective signs before judge and jury, while objective or demonstrable symptoms are positively convincing in medicolegal practice. Pain, weakness, paresthesia, anesthesia and analgesia are all subjective and may be simulated by the malingerer in extreme degree, and while of significance to the neurologist, are of but little weight to the layman in the jury box. Atrophy, especially if marked, altered deep reflexes, trophic changes in the skin, hair, nails, etc., and altered electrical reactions are objective and indisputable symptoms both in character and significance. Atrophy is to the trained expert much more certainly determined by the sense of touch than by vision.[5] The harpoon test with histological examination of the muscle tissue is advisable in doubtful and important cases. Alteration of the normal polar formula of Erb in the electrical response to galvanism is positive evidence of nerve degeneration, and therefore of organic damage.[6] Quantitative alterations to the faradic current are less positively significant alone, especially as to permanent injury. On the issue of electrical reactions alone I once won for a patient in a suit for damages in a case of traumatic neuritis. Sensory symptoms, no matter how extreme in degree, are always suspicious if unassociated with demonstrable motor trophic or electrical changes. In a recent medicolegal experience a litigant who was a malingerer of most aggravated autosuggestive type, claiming total loss of temperature sense, allowed a match to burn to total consumption resting on his bare skin without a quiver of muscle or the slightest sign of painful perception in anyway, the fact of malingerer plus self-hypnotism being easily demonstrable by a dozen tests which were successfully employed. True muscular atrophy, altered deep reflexes, properly tested, trophic disturbances and altered electrical reactions cannot be simulated, and are, therefore, of the utmost positive value in medicolegal cases.

Finally, and as a therapeutic summary, let me emphasize certain facts which will have been noted already perhaps by those who have read between the lines. First the importance of functional rest in all cases of neuritis often to the extent of mechanical enforcement; second, the value of forced nutrition, especially with fats, both constitutionally and locally, cream, butter and lanolin by inunction being always indicated; third, my great confidence in electricity and massage, neither of which, however, should be used empirically, both of which require in individual cases the utmost nicety of personal adjustment; fourth, the maintenance of an equable surface temperature in all forms of sensory neuritis, best attained by the use of lamb's wool fleece; fifth, the recognition of neurotic habit tendencies and predispositions which vary widely but should always be observed and never overlooked or disregarded and met with corrective nerve discipline, the method varying perhaps with each patient; sixth, recognition of the fact almost axiomatically true that all cases of neuritis except perhaps the traumatic and mechanical are associated with and often dependent upon states of altered metabolism and perverted nutrition to which recognition is logically correlated the necessity of tonic alterative and nutritional measures.

105 West Seventy-third Street.

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CLINICAL EXPERIENCES WITH THE ENLARGED PHARYNGEAL TONSIL.*

BY H. GRADLE, M.D.,
OF CHICAGO.

THE first publication on adenoid vegetations by Wilhelm Meyer contained so complete a description and such rational ideas concerning treatment that subsequent observers have added but minor details to the subject. I, too, can only bring before you clinical fragments which may serve to fill out some gaps in our knowledge of the enlarged pharyngeal tonsil. I shall base my remarks on personal experiences with reference mainly to questions not fully settled, or still under controversy. A repetition of commonly accepted facts would be out of place.

Referring in the first place to the diagnosis of adenoid vegetations, allow me to discuss the significance of the facial appearance. The half open mouth, the thick upper lip, the thin and pinched nostrils and the sleepy look of the lower eyelids give the afflicted children a striking facial expression which Lange has aptly termed the adenoid habitus. As Meyer has pointed out this typical face has been reproduced by some sculptors of antiquity as well as in the painted portraits of historic subjects of the middle ages. While this stamp of face is highly suggestive of hypertrophy of the pharyngeal tonsil, yet it may in rare instances be due to other lesions. I can recall some 15 children in whom my presumptive diagnosis was not borne out by further examination. They were instances of chronic suppuration in comparatively narrow nasal passages with either a

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normal, or, at any rate, a not much enlarged pharyngeal tonsil. In young children it is of course almost impossible to learn the exact site of the suppurative lesion. From the profusion of the discharge I inferred that it was due to a diffuse process. I have learned, however, that if there is any hypertrophy of the pharyngeal tonsil, however slight, accompanying this condition, its removal is essential for a cure. But the expectation of a striking improvement following the operation is not realized in such instances. Its benefits follow very gradually in connection with other treatment. Sometimes, too, though rarely, a septum deformity with enough diffuse hypertrophy to occlude both sides may simulate the adenoid habitus. But it is never produced by a one-sided obstruction.

On the other hand, the adenoid habitus is not seen in some children whose pharyngeal tonsil is sufficiently enlarged to be of decided clinical importance. It is true, however, these are but moderate enlargements producing disturbances rather by their state of inflammation than by their actual size.

It is but in a small proportion of instances that the obstruction to nasal respiration is directly due to the blockage of the post-nasal space by the hypertrophy. Such children can scarcely ever breathe through the nose and are not able to blow the nose. Most patients, however, breathe quite easily during daytime, at least, while being examined. Their real trouble begins only when they lie down, or during an acute "cold." Meyer suggested that the vegetations might vary in vascularity at different times. This is somewhat true, at least, in the case of the softer growths. The extirpated specimen is sometimes paler and apparently smaller than it appeared in the mirror during life. But repeated microscopical examinations did not show me a sufficient vascularity to account for any important variation in size according to the congestion of the vessels. I was hence led to attribute the greater obstruction during sleep to turgescence of the posterior ends of the turbinals—at least, the inferior; perhaps, too, the middle. This explains the fact that even after the most satisfactory operations it may take a few days before nasal respiration becomes normal, for the wound still keeps up the reflex turgescence. As you know, it does sometimes take weeks before the full benefit is realized. This view has also been supported by rhinoscopic observations on young soldiers by Barth, who found enlargement of the posterior ends of the turbinals more numerous in proportion to the size of the enlarged pharyngeal tonsil. In a small number of children I have been able to see the distended turbinals filling the posterior choanæ.

The variable degree and duration of turbinal turgescence explains likewise why the characteristic adenoid "dead" voice is not equally pronounced in all patients. It is invariably present in all large hypertrophies, but when the tonsil is not very large relative to the size of the upper pharynx the absence of resonance depends on the amount of occlusion of the choanæ by the swollen turbinals. Hence, a person without adenoid enlargement may temporarily speak in a typical manner during a severe coryza. Incidentally I may remind the audience how well Dickens has portrayed the adenoid voice in his character Barney in Oliver Twist.

The inattention or want of mental concentration of adenoid children which Guye has termed "aprosexia" seems to depend entirely on the size of the hypertrophy, and not on the obstruction by vascular distention. I have not met with it in over 15 per cent. of my cases, and these were all instances of large tonsils. It is, however, by no means present in all children with large adenoids, and its mode of occurrence is hence not clear.

Unless one has personally watched children with pronounced obstruction during sleep, it is difficult to realize how much disturbance this lesion engenders. The restlessness and tossing of these little patients is sometimes pitiable in the extreme. Frightening dreams, night-terror and nightmare are more common than is ordinarily stated. I have known two instances of asthma in children to cease after removal of adenoids, but I was not able to observe either one long enough to speak of a permanent cure. I can record, however, the relative frequency of cough as a reflex symptom in instances in which no bronchitis was present, basing the statement, of course, on the prompt disappearance of the cough after operation. In most instances, however, the cough present is really due to a subacute bronchitis secondary to the pharyngeal lesion. My experience agrees also with that of Groenbeck regarding the frequent coincidence of enuresis with adenoids. In rare instances the habit ceases promptly after operation; oftener, however, it disappears very gradually. Again, in a few cases the incontinence did not seem to be benefited by the removal of the tonsil.

It does not seem to me to have been sufficiently emphasized that the most mischief started by adenoids results from attacks of inflammation so frequently occurring in the tonsil when enlarged. These inflammatory spells, often but subacute from the start, extend to the nasal passages, to the ears, and not rarely descend into the bronchi. The enlarged pharyngeal tonsil is not necessarily or continuously inflamed. Like large faucial tonsils, it may be fairly pale, though never as pale as a non-inflamed faucial tonsil. During such periods there are no symptoms except those due to the size of the hypertrophy. Moreover, there is no purulent secretion during this quiescent period. That it is not merely the presence of the pharyngeal hypertrophy, but that it is the inflammatory attack starting there, which accounts for the involvement of the bronchial tubes and of the ears can readily be learned from carefully taken clinical histories in suitable cases. From observant parents we can learn that the bronchitis or the acute ear disease is the sequel of a "cold" first noticed in the nose or throat. While this in-

flammatory origin is quite evident in the case of a primary or a recurrent purulent otitis, it is commonly believed that the ordinary form of impaired hearing resulting from adenoids—the so-called Eustachian catarrh—is produced by pressure against the Eustachian orifices. This view is not borne out by my experience. In the rhinoscopic view, whenever feasible, the lymphoid growth is usually found quite distant from the Eustachian region. Hearing is not necessarily impaired by adenoids, even when quite large. The Eustachian obstruction may begin any time after the growth has long been known to exist, and in favorable instances the ear symptoms sometimes disappear spontaneously when the inclement season is over. Occasionally one can get the definite history of an inflammatory attack in the nose preceding the impaired hearing. As a rule, however, this form of ear involvement begins so insidiously that the history is not decisive. As we all know, the prognosis for the hearing is on the whole quite favorable in simple Eustachian catarrh. It has seemed to me, indeed, as if the danger to the ears had been somewhat overstated in literature. Yet I am not unmindful of the fact that in relatively rare instances Eustachian obstruction resulting from adenoids may lead to mucous exudation and ultimately to proliferative changes in the middle ear. We must also take into account that adenoids are found in a large majority of deaf-mutes, and that in those subjects their presence is often an important factor in the etiology of the graver and irreparable lesions.

The relation of adenoids to eye affections has not received quite the attention it deserves. Of children suffering from phlyctenular keratitis a large majority have a hypertrophied pharyngeal tonsil, although extremely large growths are rather exceptional. Within the last two years I have followed the practice of removing the adenoids in all such instances, even when they had caused no disturbance beyond slight impairment of nasal permeability. While the erratic course of phlyctenular keratitis does not permit dogmatic statements, I must still insist that my impressions regarding this treatment have been very favorable. In cases which had previously been properly treated by others, but without attention to the adenoids the operation has so often changed promptly the course of the eye disease, as to leave little doubt regarding the pernicious influence of the pharyngeal lesion.

Any observer with moderate experience cannot fail to notice the striking influence of adenoids upon the general nutrition in some instances. The majority of our juvenile patients, it is true, enjoy good general health and suffer only from local symptoms. But in about 20 per cent. the weight and even the growth are below par, the children are frail and anemic. All this malnutrition is, as a rule, corrected, and often to a striking extent, by operation. This influence on nutrition does not depend on the size of the growth. Quite often a relatively small tonsil has escaped detection on account of but slight obstructive symptoms, and yet the child will pick up wonderfully after its removal. I have many records of a gain in weight of 10 to 20 per cent. within half a year following the operation. The interfered breathing and disturbed rest can scarcely account for this effect upon nutrition, as the latter is not proportionate to the former. It seems rather as if some adenoids exerted a poisonous influence upon the system. I need but remind you of the researches of Lichtwitz and Sabrazès, who found an inversion of the percentage formula of white blood-corpuscles together with a high anemia the common rule in adenoid children. Personally, I have also found anemia improving rapidly after operation.

As children advance in age the proportion of immediate and complete results following a satisfactory operation is somewhat lessened as compared with younger subjects. I attribute this to hyperplastic lesions in the upper air passages often induced by adenoids in the course of time. This influence is best observed in the faucial tonsils. Hypertrophy of the latter without adenoids is not common, while conversely moderate adenoids without abnormal faucial tonsils are much more often met with. Decisive of the relationship between the two is the frequent observation that after the adenoid operation the faucial tonsils lose their irritated appearance and shrink slightly in size. Hence, the indications for their removal disappear not rarely after the pharyngeal tonsil has been taken out. Similarly I have noticed that among children with septal hypertrophies there are but few without adenoids. As these septal irregularities, apart from pure deflections, are not common until long after puberty, the prevalence of adenoids cannot but signify an etiological relationship. I will refer, too, again to the statistics of Barth, showing the effect of unremoved adenoids in causing enlargement of the turbinal extremities.

The cause of the abnormal growth of the pharyngeal tonsil I can only find in repeated attacks of coryza in predisposed subjects. Whenever I have been able to observe personally, or to trace reliably the development of adenoids, it was always the same history. The baby's first disturbance was a severe "cold" in the nose, with obstruction and purulent discharge. The attack subsided but the interference with nasal breathing remained, and became intensified with every subsequent coryza. As far as I have been able to observe, the morbid growth begins in the first or second year of life, though often it does not reach an embarrassing degree until a few years later. If, however, no enlargement has occurred within the first three of four years I have all reasons to believe that there is no predisposition to lymphoid hypertrophy. I have known a few instances of acute inflammation of the pharyngeal tonsil in older children who had previously had normal nasal breathing. The tonsil was swollen to an extent simulating extreme adenoid hypertrophy. Yet it regained its normal size in the course of some weeks and left the nasopharynx

unobstructed. I have never met with congenital adenoid hypertrophy and greatly doubt its possibility. Regarding the nature of the predisposition to hypertrophy we have as yet no knowledge. To some extent it is hereditary. For it is quite patent that in some large families there are more instances than could be accounted for by accident, while in others it is conspicuously absent.

The predisposition to lymphoid enlargement is marked in instances of degeneracy. Various observers have noted that large adenoids are almost the rule in imbecile children which I can confirm in my limited experience. Among some 1,200 cases which I have operated there were about 15 to 20 children—over 1½ per cent.—who while not imbecile, were backward mentally to an extent beyond what could be considered "aprosexia." As far as I could learn they were little or not benefited mentally by the operation. This is a larger proportion than would be found in children without adenoids. Again the proportion of adenoids in deaf-mutes is strikingly larger than in normal children. While this lesion is in some instances a factor in the causation of the labyrinthine lesion through extension of disease of the middle ear, it is in the majority of deaf-mutes but an associate evidence of a degenerate tendency. It has also been stated that adenoids are the rule in children with cleft palate. Of six cases, however, which I have examined three only had enlargement of the pharyngeal tonsil.

An important and not fully solved problem is the relation of adenoids to scrofula, as in apparently scrofulous children adenoids are much more common than in others. If we use the term scrofula in its older clinical but rather vague sense, viz., referring to a poorly nourished, pale child with adenoid stamp of face and liability to purulent otitis, it coincides with the picture due directly to the enlarged tonsil. To a certain extent the appearance of scrofula is thus produced or at least simulated by the adenoid hypertrophy and ceases after its removal. But the trend of modern research suggests that true scrofula is more than this, that it is really the result of slight chronic poisoning of the system from some tubercular focus in lymph glands. As a rule, the enlarged pharyngeal tonsil cannot itself be accused of being this focus. For a large number of microscopical examinations by different observers have shown that about 95 per cent. of adenoids contain nothing suspicious of tuberculosis. It is only in some five per cent. of specimens that caseating tubercles are found. I have had 15 successive tonsils examined showing two times tuberculous infiltration, a proportion which is no doubt accidentally large in so small a series. It is striking that tuberculosis of the tonsil does not reveal itself either during life or on gross view of the extirpated growth. The concordant opinion of all who have followed their cases is that the tonsillar tuberculosis is rarely if ever primary. Lewin has shown, too, that in tuberculous cadavers tubercles are found about as often in the pharyngeal tonsil when of normal size as when enlarged. Hence we can consider actual tuberculosis of the pharyngeal gland only as an exceptional occurrence. It is, however, worth noting that adenoids are so often the cause of enlarged lymph glands on the back of the neck. That many of these glands are tubercular has been shown both by autopsies and by diagnostic tuberculin injections. Hence the suspicion is at least tenable that after all the enlarged pharyngeal gland may be the gate of invasion of the tubercle bacillus, even though the latter does not often cause local manifestations in the tonsil itself.

There can be but little dispute regarding the indication to remove every enlarged pharyngeal tonsil that causes disturbance by its enlargement or its periodic attacks of inflammation. Regarding the size of the normal tonsil we cannot accept the dictum of the anatomist, as his observations do not decide whether a given specimen is or is not strictly normal. On the basis of rhinoscopical examination I regard a tonsil as morbidly enlarged whenever it protrudes abruptly above the level of the surrounding mucous membranes, no matter how little. But a minor and stationary hypertrophy in a relatively spacious pharynx produces no symptoms and hence calls for no interference. Incidentally, I may remark that all the older illustrations of adenoids during life with exaggerated coxcomb and stalactite appearance are fanciful, for nothing like this is seen in completely extirpated specimens.

A trial of almost all instruments for the removal of adenoids has led me to decide definitely in favor of Schütz's guillotine-shaped pharyngotome as the best. I have modified it slightly in construction and especially in the shape of the handle, and can now report nearly five years' experience in about 250 operations. As now made it is very substantial and can be perfectly cleansed and sterilized by dipping it into boiling soda solution. The knife blade is apt to break when moved to and fro very many times in succession, but can be quickly replaced. A break during operation, which has occurred to me but once, led to no trouble beyond a second introduction. I consider its use the most thorough and quickest of all operative methods. A similar strong endorsement of the original Schütz instrument had previously been given by Hessler after trial in 100 operations. The ordinary pattern is applicable in all children above three to four years of age, while a smaller size can be used in younger subjects. It can slide round good-sized enlarged faucial tonsils and is only hindered by an unusual degree of their hypertrophy. With the head thrown back, the shoulders forward, the lower jaw well depressed, the guillotine pushed firmly upward and backward, the entire tonsil is bound to be cut off in one sweep. Unless swallowed, which is a rare accident, the specimen demonstrates the correctness of the diagnosis and the thoroughness of the operation. A slip, as sometimes happens with the Gottstein knife, is

almost impossible. As often as I have reinserted the instrument a second time, I have usually failed to bring away any more remnants, provided I pressed firmly enough in the first instance. Examination after healing shows occasionally a small fringe of adenoid tissue next to the upper rim of the choanæ. These remnants were of sufficient size to permit or demand a second operation but twice in over 200 instances. The hemorrhage is the same as with any other operative method, but it does not last as long. In my former experience with my older pattern of forceps or with the Gottstein knife a return and persistence of hemorrhage occurred in about one per cent. of cases. I have been able to trace such persistent bleeding to tags of partially detached tissue. As the adenotome makes a clean sweep, this danger is removed.

The quickness of the operation has made narcosis entirely unnecessary in my practice. I employ anesthesia only when the faucial tonsils are to be removed in the same sitting, or when the parents demand it. While we cannot anesthetize completely by means of cocaine, still, the local effect of cocaine aided by adrenalin reduces the discomfort to such an extent that I cannot but consider narcosis the harsher procedure for a child. The timely warning by Hinkel has shown the danger of chloroform in adenoid children to be so great that it should not be employed. As far as I can learn from literature and my small experience, ether is not more dangerous to these subjects than to average children, but on account of its more unpleasant action it has not been used as much as chloroform. For a simple adenoid operation nitrous oxide gas is undoubtedly the safest and least objectionable if an anesthetic is to be used. But I can only repeat that outside of multiple (faucial) tonsillotomy the adenotome enables the operator to do his work more quickly, with equal thoroughness and with no more harshness on the wide-awake child than under narcosis.

While operating with my former forceps I found it necessary to do a second operation after reexamination during the second week in nearly one-quarter of cases. With increasing practice this number diminished, but especially so by beginning with the Gottstein knife and following with my forceps if the removed specimen did not seem to include the whole tonsil. The adenotome, however, has but twice failed in reaching from the anterior to the posterior end of the growth. Undue stress it seems to me has been laid upon the extension of adenoids into Rosenmüller's fossæ. Ordinarily the base of the growth does not extend quite so far laterally, though soft vegetations sometimes spread out along the surface. In rare instances lymphoid tissue really fills the fossæ after the tonsil has been removed. This can only be taken away with a small curette, provided irritation of any kind indicates its removal. Large wing-like masses of lymphoid tissue which in rare instances descend from the fossæ to below the level of the soft palate I have found to be infiltrated reduplications of mucous membrane independent of adenoids proper, as they occur sometimes without the latter.

For the removal of remnants of the tonsil left by an incomplete operation I have found the cold snare the most convenient instrument. I use a straight snare through the mouth with the wire loop bent upward. This manipulation causes so little pain that repeated insertions are always tolerated by manageable children.

Relapses of adenoid growth I have only seen after incomplete operation, as indicated by the history or the asymmetry of the growth. Their probability seems to depend on the amount of tissue left as well as on the youth of the patient and his susceptibility to inflammatory attacks.

THE SURGICAL TREATMENT OF DYSMENORRHEA.

BY WM. E. PARKE, M.D.,
OF PHILADELPHIA.

WHEN asked to read a paper on the surgical treatment of dysmenorrhea, an aphorism of student days respecting diseases of the ear at once came to my mind, namely, diseases of the ear are divided into two classes, those that are cured by the use of the Politzer bag and those that are not. In a like manner I might suggest that dysmenorrheas may be divided into two classes, the one curable by dilatation and curettage, the other not.

The causes of dysmenorrhea having been set forth by my predecessor, I will only allude to the symptomatology to indicate the type for which operative measures promise relief.

The rôle which dilatation and curettage plays in the operative treatment of dysmenorrhea, you will perceive, is an important one, although operations of greater gravity are demanded when this symptom is secondary to certain pathological changes.

The symptom of true obstructive dysmenorrhea is *pain* which has the cramp-like character of labor pains. It may follow an operation, or examination may disclose the presence of a new growth. The operative treatment of this condition will consist, of course, in the removal of the cause. If it be a fibroid, remove it if feasible, amputating the cervix, if necessary, or do a hysterectomy. When obstruction is due to cancer the disease is usually so far advanced as to be incapable of complete removal, and we must be satisfied with scraping out the canal. If cicatricial contraction following operation be the cause, dilatation should be done, and curettage is in order, for the endometrium is always diseased under these circumstances.

The small anteflexed uteri are usually underdeveloped. Pain in this class of cases was formerly thought to arise from obstruction due to angulation of the canal. This is probably an error. Dilatation sometimes benefits these cases, but they are not promising ones for cure by this means.

Membranous Dysmenorrhea is attended by pain not unlike labor pains, which come on with the beginning of the menstrual period and continue with increasing severity until the membrane is expelled. It is in this particular an obstructive dysmenorrhea, and its surgical treatment should consist in a wide dilatation, curettage and application of pure carbolic acid to the endometrium. This expedient affords relief from the severe pain for a time and occasionally cures the disease.

Spasmodic Dysmenorrhea is characterized by pain which is cramp-like, and often of great severity, causing the victim to toss about, sweat, and sometimes vomit or even faint. It is paroxysmal and usually of short duration but rarely may be prolonged sufficiently to lose this distinctive sign. When severe, it is not localized to the uterus, but fills the whole pelvic zone, and may or may not come and go with the menstrual flow. Recumbent posture does not favorably affect the pain, and patients often express themselves as relieved by alcohol. A fairly large percentage of this class of patients are sterile. Physical examination of these cases, after some years of suffering will show a somewhat hypertrophied uterus.

The simple operation of dilatation and curettage finds its greatest field for usefulness in this type of cases. It is probable that the internal os in this condition is unusually sensitive and acts as a sphincter, and that forcible dilatation paralyses or lacerates some of the muscular fibers and thus relieves spasm, just as the dilatation of the sphincter ani muscle relieves spasm. The drainage canal is thus widened and secretion and especially clots are expelled with less muscular effort.

Congestive Dysmenorrhea is marked by pain of quite a different character from the preceding. Here it is more or less constant and precedes the flow by some days or a week. It may be simply an exaggeration of the aching that so commonly accompanies menstruation, or be severe enough to confine the patient to bed. It is worse at the beginning and improves toward the end of menstruation. It does not cause tossing about, fainting or vomiting, and is improved by the recumbent posture. The seat of pain is the pelvic area, but it is so often localized to the region of the left ovary, or both ovaries, as to give rise to the name of ovarian dysmenorrhea. Congestive dysmenorrheas are often dependent on pathological changes in the uterus itself, or its appendages, such as chronic metritis or endometritis, retroflexion, fibroid tumors and inflammation, or prolapse, of the ovaries and tubes. Congestive dysmenorrheas pure and simple do not require surgical treatment for their cure; but when they are secondary to the conditions above mentioned, some operative measure affords the only substantial relief in our hands. Thus a retroflexed uterus should be not only dilated and curetted, but the organ should be restored to the normal position by an appropriate operation such as shortening the round ligaments or hysterorrhaphy. When diseased appendages are the cause of the pain, its cure may depend on their removal. If fibroid tumors are present, their removal is to be advised, although dilatation and curettage will sometimes greatly ameliorate the condition, and should be tried where consent for the greater operation cannot be obtained.

The text-books mention other varieties of dysmenorrhea, for instance, neuralgic dysmenorrhea and rheumatic and gouty dysmenorrhea, which I mention only to remark that they do not come within the sphere of operative treatment and hence not within the scope of this paper.

The above-mentioned kinds of dysmenorrhea, I need scarcely say, are not always found conforming to a single type, but are sometimes blended, the symptoms of one class predominating over those of the others. Thus we may have a dysmenorrhea partly congestive and partly neuralgic—or spasmodic and congestive, and so are led not to give too rosy a prognosis in many instances after dilatation and curettage, for it is not a universal cure.

There is a dysmenorrhea or a condition associated with dysmenorrhea, which I think of sufficient importance to merit a special paragraph. I refer to ectopic pregnancy. A characteristic history is as follows: The patient misses one or more periods and may suffer from slight pelvic pain. Suddenly she is seized with severe pelvic pain and metrorrhagia with perhaps the discharge of membranes. This sometimes continues for days or even weeks, if the patient survives. She thinks it is simply irregular menstruation or perhaps a miscarriage; and not rarely the true nature of the case is overlooked by the physician who does not make the necessary examination. The operative treatment consists in the removal of that appendage which is the seat of the pregnancy.

Before describing the technic of the operation of dilatation and curettage, I consider it important to point out the contra-indications to this simple procedure. One should never dilate and curette a uterus whose appendages are known to be diseased, unless at the same time an appropriate operation is done upon the appendages; that is, when a physicial examination shows the presence of masses on either side of the uterus or adhesions of that organ, or of the tubes and ovaries.

Technic.—The operation should be conducted with the same antiseptic care as operations on other parts of the body. It is, therefore, necessary to anesthetize the patient; to wash the vulva and vagina carefully with soap and water, and to follow this with a bichloride or other antiseptic solution.

After introducing a speculum to retract the perineum, seize the anterior lip of the cervix with a volsella forceps, to draw down the organ and hold it firmly, while the smaller sized Goodell or Walthen dilators are introduced into the uterine canal (using previously, if necessary, a uterine sound to find the direction of the canal).

Stretch the canal sufficiently to introduce the larger sized dilator. Continue with this instrument to stretch the canal, either rapidly and in all directions or more slowly in one direction (Goodell's method) until, in a nulliparous woman, the blades are three-quarters of an inch apart, or in a parous woman they are as much as an inch or an inch and a quarter apart. The dilated canal will now admit a curette without undue force. This should be a sharp one (I know of no use for a dull curette). It should be grasped firmly by the thumb and fingers so that the amount of force used can be delicately determined. The whole endometrium is to be carefully scraped until the contact of the instrument with the more substantial underlying muscular structure becomes audible and communicates a distinct thrill to the operator's hand. That part of the endometrium which lines the uppermost part of the cavity is best reached by the curette forceps, an instrument which is a combination of the Gross stone forceps and the postnasal curette forceps. Following this the débris is to be washed out with sterile water through a two-way catheter, or wiped out with dry gauze

While I have alluded to this as a simple operation, I do not want to leave the impression that it is wholly unattended with danger. For in the hands of the most experienced surgeons, perforation by the dilators or curette has repeatedly occurred; and in the hands of less experienced operators serious damage to other abdominal viscera has been recorded.

It is, therefore, not to be undertaken without a physical examination to determine the absence of contra-indications, and should be done with the greatest attention to antiseptic details, and with judgment and care to avoid accidents.

THE DANGERS OF INFLATING THE STOMACH WITH CO_2 GAS; ITS DIAGNOSTIC VALUE. REPORT OF THREE CASES WITH AUTOPSIES.

BY MOSES BEHREND, A.M., M.D.,
OF PHILADELPHIA.

IT IS a remarkable fact that in a vast amount of literature reviewed not one case has been reported in which death can be directly ascribed to the use of carbon dioxide gas in inflating the stomach. The test has been used extensively in the last decade by many observers. Von Ziemssen and Mankopf have been strong advocates of this method; Mankopf and von Frerich being the first to use it. They advise it because of the sudden distention of the stomach which this gas causes, whereby the contour is easily outlined and the various displacements and morbid processes are thus more readily diagnosed. This is undoubtedly true, but the dangers following this explosion must be attributed to the sudden evolution of gas over which we have no control.

Referring to the CO_2 method of inflating the stomach Ewald says: "These methods suffer from the disadvantages that we have no control over the amount of gas produced after the salts have been introduced into the stomach or intestines, that disagreeable accompanying symptoms frequently arise from the irritation of the CO_2 gas upon the walls of the stomach or intestines and that, even though varying quantities of gas are needed for different persons, the degree of tension produced cannot be regulated at will or increased at a given moment."

Ewald again, in quoting Oser, Meinert and Riegel, states that these men have not noted any unfavorable results from this method. Schütz believes that a better examination can be made with CO_2 gas than with the inflation of air, on account of the sudden distention produced by the former procedure. Opposed to him are Runeberg and Oser, who inflate the stomach with air by the passage of the stomach tube. They believe that in this way the degree of the distention of the stomach can be well regulated. No one will doubt this, but this method is not without its dangers and disadvantages. The passage of the stomach tube is the main objection, especially with private patients.

The use of CO_2 gas in office practice for diagnostic purposes was recently mentioned by Elsner. Steele uses both to a considerable extent at the University Hospital. The practice of using these methods in the office and dispensary should be condemned.

The disastrous results obtained from the use of CO_2 gas for diagnostic purposes has led the writer to report the cases under his observation while interne at the Philadelphia Hospital. The method under discussion is certainly of diagnostic value as in all the cases the situation of the disease was located before death.

A diagnosis being difficult in the three cases led to the employment of CO_2 gas. The usual technic was followed. About one dram each of tartaric acid and sodium bicarbonate was dissolved in half a glass of water. The sodium bicarbonate was given first, followed immediately by the tartaric acid solution. Almost instantly a swelling was noticed in the epigastric region in one case. In all three there was a sense of oppression followed by depression and a condition resembling shock.

In the case just mentioned hemorrhage resulted, causing death of the patient twenty hours after its use.

Case I.—M. P., aged sixty-eight years; admitted to hospital May 2, 1901. She was sent from the out ward with a history that she had been in bed at intervals for several weeks and that she vomits after taking food. The chief complaint on admission to the hospital was weakness and inability to keep anything on her stomach. Her family history was unimportant. She had malaria, yellow fever and rheumatism. Menstruated at thirteen years. Always regular. Menopause not known. The present trouble extends over a period of twelve months. At the time I saw the patient she had symptoms referable to the stomach. She was well nourished but pallid. Marked

cardiac arrhythmia was also present; this was absent on admission to the hospital one year later. Now she vomits immediately after eating, appetite gone, marked eructations of gas, bowels variable, headache, vertigo, palpitation, some dyspnea, and pain across the epigastric region.

Physical Examination.—Patient is a very much emaciated woman; skin universally wrinkled; chest capacious, costal angle obtuse; breasts atrophied, though pendulous; abdomen scaphoid. Heart sounds are weak, though rhythmical. Lungs are emphysematous. Liver and spleen apparently normal in outline. Tenderness in epigastric region. No mass can be felt.

May 7, 1901. She is getting gradually worse, vomiting everything eaten. No blood is noticed. Drugs do not relieve her at all.

May 12, 1901. No diagnosis having been made, it was decided, after consulting my chief, Dr. W. E. Hughes, to use the CO_2 gas to inflate the stomach. Immediately after its use the patient was greatly distressed, tossing her head from side to side and making special efforts to throw off the gas. About half an hour afterward she vomited a quart of blood and at irregular intervals during the course of twelve hours large quantities of blood were ejected. Patient lived twenty hours after taking the seidlitz powder. At the time of her death she was exsanguinated.

AUTOPSY BY DR. FLEXNER.

Pathological Diagnosis.—Ulcer of stomach, hemorrhage, general anemia, adhesive pericarditis, chronic nephritis, small, granular kidney, atrophic cirrhosis, cholelithiasis, nephrolithiasis, acute peritonitis, cyst of ovary (left). That part of the autopsy relevant to the stomach condition will be described. Loops of intestine are distended, dark in color, tissues of lesser omentum are infiltrated with small recent hemorrhages. Stomach. Old adhesions on left side between fundus and spleen and between spleen and diaphragm. Stomach is not dilated, greater curvature shows a series of fine linear ulcerations. These are arranged in a radial manner about the esophageal orifice and average 4 cm. below the orifice. They extend into the submucous coat. They vary in length from 3 to 4 cm.; and in width from 4 to 6 cm. Their edges are elongated and slightly puckered. In the middle of base of one a small mass of necrotic tissue is seen. In addition to these there occur on the anterior surface of stomach about the middle of the lesser curvature, but near the esophageal end, a recent ulcer on which a recent clot sits. This ulcer, as far as can be made out, is triangular in form, measuring at its base 4½ cm. Its edges resemble those already described. At the apex of this triangle it is surrounded by two semicircular lines of ulceration; the larger one at the right extremity connected with an anastomosing ulcer also linear in form which is placed a little nearer the pyloric extremity. The serous coat corresponding to the necrotic focus is covered with fibrin. On moving this clot the interior of the stomach is reached. Necrotic serosa only separates it from the lesser cavity of the peritoneum. The ulcer is 4 cm. from the esophageal and 11 cm. from the pyloric extremity. The remainder of mucous membrane, especially about pylorus, is mammillated.

The immediate result, as shown by the post-mortem record, was the rupture of a blood-vessel at the base of an ulcer from which fatal hemorrhage ensued. The fact that this happened in the first patient on whom the CO_2 test was tried was an unfortunate circumstance, but believing it to be an unavoidable accident it was determined to give the test a fair trial.

It was hardly expected that in a patient almost seventy years of age an ulcer should be found. The vomiting occurring immediately after eating should probably have pointed to an ulcer of the stomach but in another case in which the same symptom was present a different condition was found.

Case II.—G. S., male, aged seventy-three years; was admitted to hospital June 21, 1901. His chief complaint was vomiting after eating. His family history was negative.

Previous History.—He had the usual diseases of childhood. Typhoid fever three years ago. No venereal disease. Always been a user of beer.

Present History.—Eight years ago trouble began with vomiting immediately after eating. This has persisted up to the present time. Can retain nothing except a little hot milk. Has no pain in stomach; no vomiting of blood.

Physical Examination.—Patient is an old man very much emaciated, a German. All bony outlines are prominent. Pupils equal and react to light and accommodation. Tongue is pale, pulse irregular in volume, arteries compressible though thickened. Chest well formed but extremely emaciated. Abdomen is scaphoid. Lungs are hyperresonant; vesicular murmur and vocal resonance diminished. Heart. Outline difficult to obtain on account of hyperresonance; sounds at apex show a slight systolic murmur. Abdomen. The only thing felt is a prominent pulsating aorta. The muscles in the neighborhood of the stomach are very rigid rendering palpation unsatisfactory. Liver dulness limited to a narrow zone of two inches.

June 28, 1901. Patient is getting weaker, vomiting almost everything eaten. Dulness at interscapulovertebral space. Esophageal bougies pass easily; larynx apparently normal. A small tumor is seen on pharyngeal wall.

June 29, 1901. To-day the CO_2 test was tried on patient. A large quantity of froth and a little blood were vomited or rather regurgitated immediately. After giving it the stomach was not distended. The patient was extremely prostrated immediately after its use and never rallied. He died on the following day.

AUTOPSY BY DR. PEARCE.

Pathological Diagnosis.—Carcinoma of the esophagus and stomach, cholelithiasis, perichole-

cystitis. The stomach is small, distended with a little gas. At the junction of the esophagus and stomach a hard mass may be felt externally. Esophagus shows agonal digestion in its middle part. Beginning 5 cm. from the cardiac orifice there is a mushroom-like tumor, soft in consistency, taking in entire diameter. This is continuous with a similar growth extending to the stomach at orifice involving the entire circumference. The central portion of both tumors is ulcerated and the ulcers are surrounded by this soft, elevated, mushroom-like growth. Surface is much pigmented and of a slaty color.

The fact that the gas generated by the CO_2 did not distend the stomach fixed the diagnosis above or at the cardiac end of that organ, and the clinical diagnosis of carcinoma of the esophagus and cardiac end of the stomach was made during life.

The diagnosis of the situation of the lesion in the previous and the next case to be reported was made because of the absence of epigastric fulness that follows the ebullition of the CO_2 gas in the stomach.

As it is always desirable to make a diagnosis during life this is an important point, but the danger connected with its use offsets its utility. To illustrate the localizing power of CO_2 gas the next case is a striking example.

Case III.—C. M. aged fifty-two years. Admitted April 12, 1901. Chief complaint, pain just below and to the left of the sternocostal angle. Nothing is known concerning his family history.

Previous History.—For years patient has had a feeling of discomfort at the point above mentioned. After eating there would be a sensation as of the esophagus being dilated. Ever since an attack of influenza six weeks ago his trouble has been exaggerated. Lost much weight. Appetite very poor.

Physical Examination.—Patient is very thin. Sclera is of a muddy color, tongue is brown. Pulse regular. The chest is spare and musculature poor; all bones prominent. Abdomen is retracted and of doughy consistency. At intercostal angle there is tenderness but no mass can be made out, the pulsating aorta is easily felt. Right rectus muscle very rigid. Heart and lungs show nothing abnormal.

April 22, 1901. Emaciation extreme, voice husky—increasing in intensity from day to day. Examination by Dr. Gleason shows paralysis of vocal cords and chronic inflammation of the mucous membrane.

April 26, 1901. Patient is getting weaker, taking very little nourishment, vomiting a quantity of black fluid with clots. Microscope showed latter to be blood.

May 19, 1901. No change since taking of last note except the increasing emaciation and weakness, no vomiting. The CO_2 test was given today, no change noted in the abdomen, stomach apparently not affected. The distress noted in Cases I and II was seen here. The patient seemed dazed after its administration and he was in a more or less semiconscious condition till the time of his death on May 24, 1901.

Clinical Diagnosis.—Carcinoma of the esophagus.

AUTOPSY BY DR. PEARCE.

Pathological Diagnosis.—Dilatation of esophagus, suppuration of tracheal lymph-nodes, chronic diffuse nephritis, chronic pleurisy, edema of lung, chronic splenitis, atrophy of right testicle. Esophagus dilated throughout entire extent, 31 cm. Greatest dilatation at cardiac end with circumference of 18.3 cm., 4 cm. in middle, 15 cm. below the beginning, circumference is 12.5 cm.; mucosa thickened, showing irregular, elevated, grayish, finely granular plaques between, which are depressed smooth black areas. This appearance is uniform throughout the entire extent. The glands about the trachea and esophagus are greatly enlarged and contain soft puriform, almost cheese-like, substance. The largest of the softening glands measure 5 x 3 cm. There is no calcification and they do not suggest tuberculosis; no condition is found which would explain dilatation of the esophagus by traction. The recurrent laryngeal nerve courses over the enlarged glands.

All these cases are interesting on account of the pathological findings; the dissimilarity of lesions with like symptoms is unique; the fact that vomiting did not occur immediately after eating in Case III is on account of the extreme pouch of the esophagus.

It must be evident from these observations that the use of CO_2 gas in inflating the stomach is a serious matter. It is infinitely more dangerous where there is disease of the esophagus and cardiac end of the stomach. This may be due to the pressure exerted within narrow limits. The test must be used, if at all, with discretion and the cases must be selected. The lives of all the above patients were undoubtedly shortened.

I wish to extend my appreciation and thanks to Drs. Wm. E. Hughes and H. B. Allyn for their kind permission to use the cases, without which this paper could not have been written.

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Sulphite of Sodium as Conservative Agent.—This substance is able to check the growth of bacteria in as weak a dilution as 0.05 per cent., but the best effects are obtained with 0.5 per cent. The bacteria are not directly killed, but are merely prevented from multiplying, and the normal color of the meat will be preserved. E. ALTSCHÜLER (Arch. f. Hyg., Vol. 48, No. 2) does not think that the use of this chemical should be permitted by law; though it is relatively harmless, it will improve the appearance and remove the odor from meat which is really already in advanced putrefaction.

ON THE VALUE OF URETERAL CATHETERIZATION AND URINE SEPARATION WITH HEMOCRYOSCOPY AND URINOCRYOSCOPY IN SURGICAL DISEASES OF THE KIDNEY.*

BY WILLIAM E. LOWER, M.D.,
OF CLEVELAND, OHIO;
LECTURER ON GENITO-URINARY SURGERY, WESTERN RESERVE MEDICAL COLLEGE, CLEVELAND, OHIO.

RENAL surgery has kept well apace with the rapid strides made in the surgery of other organs. However, the good showing in the surgery of the kidney has not been, as in many of the other instances, due so much to the improved technic of the operation, as to the better methods of diagnosis.

The splendid results in renal surgery, which are now being reported from all over the world, are encouraging in the extreme, and are splendid monuments to greater precision in diagnosis. To analyze briefly the causes of the high mortality rate of a decade or more ago, we find the principal reasons for the postoperative deaths to be (1) the congenital absence of a second organ, which is assumed to be present; (2) the degeneration of the organs, whereby a partial or total disappearance of the same has occurred; (3) a pathological condition of the other organ, which is of normal shape and size, but which is functionally more or less inert. To eliminate these factors from the causes of postoperative deaths is the object toward which the clinicians must direct their efforts.

How are we to diagnosticate the presence or absence of a second kidney? The methods formerly in vogue and still recommended by some, are inspection, percussion, palpation, and actinography. A mere mention of these methods is enough to show that none has any absolute worth. All are unreliable, and at times highly inaccurate. Much more reliable are the methods of cystoscopy, ureteral catheterization, and lastly the exploratory incision.

When ureteral catheterization is possible, a definite demonstration of the presence of a kidney can be established, especially if a stilet be used and an X-ray picture taken. If catheterizing the ureter be not possible, then a separation of the urine by one of the different separators should be practised and in this way establish the separate flow of urine.

Having determined the presence of a second kidney, how can we best determine the functionating capacity of that organ? By the functionating capacity of the kidney is understood the power to elaborate its peculiar excretion. If there is to be a cutting operation on a kidney, it is not enough to know that there exists a second kidney, but it is absolutely necessary to know that there is present a second kidney in good enough condition for the preservation of the patient. In order to establish this it is necessary to obtain the urine from each kidney separately. For this purpose two methods are known, the direct and the indirect. The direct method consists in obtaining the urine directly from the ureter or kidney by ureteral catheterization; the indirect, by getting the urine separately in the bladder, or by compressing one of the ureters. This latter method is probably no longer in use.

When it is possible to do a ureteral catheterization the separation is absolute—and this should be the method of choice. True, it is more difficult to do, but it is more certain in its results. Not only is the result of separation more definite, but the source of any pathological products is determined; *i.e.*, whether in the upper or lower urinary tract.

The objections to catheterization are well known, but not well founded. They are (1) that the method is unsafe, (2) that it is difficult of application. My own experience is still too limited to be of great value but in upward of 50 cases in the past eight months there have been no symptoms whatever of any infection, and little or no reaction. Those of larger experience report equally good results. That it is of difficult application cannot be denied, but that it can be done safely is enough to recommend it.

The advantages claimed for the different separators and segregators are, their ease of application and the less danger of infection. It has been my experience that the use of any of the segregators or separators is more painful and annoying to the patient than the cystoscope, especially in the female, for in this class of cases the cystoscope can be removed after the catheters are introduced, and there remains absolutely no discomfort while the urine is secreted.

The worst objection, however, to the use of a separator or segregator is that it furnishes no clue whatsoever as to the source of the pathological elements found in the separate specimens. An ulceration in the bladder may show pus and blood in one specimen and nothing in the other, yet both kidneys be absolutely healthy.

All advocates of these instruments recommend that the cystoscope be used in addition, to diagnosticate the source of the trouble; if, then, the cystoscope must be used to clear up the location of the lesion why not use the catheters at the same time? I use the separator or segregator only when catheterization can not be done, and this occurs in not more than 15 per cent. of the cases.

The obtaining of the separate urines is, however, not the only use for the ureter catheter, but probably the greatest. The additional diagnostic values of the cystoscope and catheter are; (1) whether the bladder or kidney is the seat of the lesion; (2) the presence and location of a stricture of the ureter; (3) the presence and location of a stone in the ureter; (4) a differential diagnosis between diseases of the kidney and surrounding organs, and in this last application I was recently able to clear up two very interesting cases. The one case was a most unusual one, of a male sixty years old, in whom, during the passage of a renal calculus, appendicitis developed; a mass formed over the course of the right ureter in the inguinal region, and by the usual methods

*Read at the Ohio State Medical Society at Dayton, June 3, 1903.

of inspection, palpation, etc., it could not be determined whether we had to deal with an appendiceal abscess or an inflammatory mass around the right ureter. The ureteral catheters were inserted and passed freely; urine flowed with equal rapidity from both sides. A diagnosis of appendiceal abscess was made and verified a few minutes later by opening a large abscess, caused by a necrotic and broken down appendix. The case made a splendid recovery.

In another case of a boy, eighteen years old, who had repeated attacks of right sided pain, chills and fever, muscular rigidity, vomiting, etc., no positive diagnosis could be made. Two physicians had diagnosed appendicitis, one a renal calculus, and still another an inflammation of the gall-bladder. At the time the case was presented for examination a mass could be distinctly outlined in the right hypochondriac region; there was muscular rigidity and great soreness.

From the physical signs present it seemed as though it might be any one of the organs before mentioned. There was, however, a history of having found on several occasions a brick dust sediment in the urine. Double ureter catheterization was done, and a "surgical kidney" on the right side diagnosed. He was operated upon and an infected hydronephrotic kidney removed. A complete recovery followed.

After the urine has been obtained from each kidney, What is the best method for ascertaining the amount of work being carried on by each organ? Albumin in the urine has been the one symptom indicative of a diseased kidney, upon which the profession has relied for many years. No albumin present, has until recently meant no disease. The discovery of casts in the urine, when there was no albumin, changed the significance of the presence of albumin, and caused the profession to seek other means of diagnosis.

The estimation of the total amount of solids in twenty-four hours, especially the amount of urea, has been of great aid in determining the sufficiency of the kidneys, but as this may vary with the quantity of nitrogen taken, upon the amount of exercise, and upon meteorological changes, etc., it becomes a rather unreliable symptom unless all the above conditions are taken into account and the period of examination extended over a number of days.

Slightly less objectionable but not, however, much more satisfactory is the method by which the excretion of certain substances introduced into the body is determined. The first indication of attempting to utilize this method as a diagnostic measure is to be found in the writings of Beauvaire, 1853. He saw in the absence of the odor of asparagus from the urine a characteristic symptom of nephritis. Since then the intolerance of opium, quinine, salicylic acid, mercury, etc., have been held at different times to be an indication of renal insufficiency.

Of late the amount of discoloration of the urine produced by the introduction of methylene blue into the body has gained a more general attention, but recently it has been found that it only tests the permeability of the kidney, and is now more or less abandoned as a diagnostic measure.

Another method which is in part dependent on the secretory function of the kidney, is the so-called phloridzin method, by which not only its secretion but also its chemical activity may be determined. It has been observed when phloridzin was injected into an animal, after a lapse of twenty or thirty minutes, sugar appeared in the urine, the amount varying with the condition of the kidney. It was concluded, therefore, that it not only showed the permeability of the kidney, but also the functional activity of the renal cells.

Casper and Richter have worked this out clinically, and state when combined with ureteral catheterization it is to be classed as one of the valuable aids in the determination of the functions of the kidneys.

Besides the various chemical methods just mentioned there remains another method, which is probably destined to play a greater part in the diagnosis of the renal function than any other that has yet been introduced. This method is cryoscopy. To this procedure I desire particularly to call attention. As is well known, the greater the number of molecules in a given solution the lower will be the freezing point below that of distilled water, and in this way the amount of solid constituents in the urine and blood can thereby be obtained.

Dresser was the first to apply this to urine, but it was Koranyi who first gave this method its practical application in demonstrating thereby the secretory activity of the kidney. This work of Koranyi created a very great interest among the scientific clinicians, and much has been done and written on this subject. While none attribute to it absolute worth, all agree it is of the greatest supplementary aid. The normal freezing point of the urine varies from 1 to 2.3 below that of distilled water. The normal freezing point of the blood being .56 to .57.

Kümmel has made a study of the freezing point of the blood in 265 persons including 137 subjects with normal renal functions. If the freezing point remains within normal limits, .55 to .57, in a case of unilateral nephritis, the kidney can be removed without apprehension; that is to say, the other kidney is doing compensatory work. In 40 such cases recovery was uneventful and the renal functon undisturbed, while in every case in which the freezing point was .59 exhibited a sluggish renal function afterward and also albuminuria.

These facts are further established by the results in the cases in which the freezing point was .58 to .81. The assumed renal insufficiency was confirmed in every instance by the autopsy or operation. Nephrectomy is still possible at .59, but .60 is the extreme limit of permissible nephrectomy. It has been found in nearly all the cases when the freezing point of the blood is low, that of the urine will be high. Urinocryoscopy with ureteral catheterization and urine separation has

been of the very greatest aid in my clinical experience.

The freezing of the urine is a comparatively simple matter. At least sufficient urine to cover the bulb of the thermometer should be used. The Beckmann apparatus is probably the best instrument. The freezing should be done while the urine is fresh.

In two cases of tuberculous pyonephrosis, in one case of a suppurating cyst of the kidney, in one of pyelitis and infected hydronephrosis, and in one of miliary tuberculosis, the functionating capacity of the supposed healthy kidney was ascertained by urinocryoscopy. All of these cases showed a renal sufficiency. Nephrectomy was done in each case, and all made good recoveries. An equally good result was obtained in a case of nephrotomy.

In two cases, one of hematuria and one of pyuria, operation was advised against because of renal insufficiency. The justification of this advice was demonstrated when both cases succumbed to uremia, one ten days and the other three weeks after the examination.

In a number of cases pus has been demonstrated in one or the other kidney, but in all of these cases a good functionating capacity was present. The kidney substance was probably not much involved, the infection being mostly in the pelvis of the kidney. In such cases the administration of urinary antiseptics and irrigation of the pelvis has been of very great benefit.

The writer does not offer this method of cryoscopy as a substitute for the other methods of examination, for it in no way determines the anatomical condition as shown by the presence of pus, casts, red corpuscles, and micro-organisms, but offers it only as an important supplement, and as the best known way at present of determining the functions of the kidney.

The deductions from a previous paper on the same subject are submitted in conclusion:

1. Before doing a cutting operation upon a kidney—especially before doing a nephrectomy—the presence of a second functionating kidney should be established.

2. The best and safest method for ascertaining the presence of a kidney is by the aid of cystoscopy and ureteral catheterization.

3. The function of the kidney is best determined, in order of importance: (*a*) By the freezing point of the urine; (*b*) by phloridzin glycosuria; (*c*) by the quantity of urine excreted; (*d*) by the freezing of the blood.

4. The most reliable method of obtaining the separate urines is by the ureteral catheter.

Colorado Medicine.—The Colorado State Medical Society has decided to publish a monthly journal. This will include its Transactions, replacing the annual volume. But it will perform a more important function, as the official organ of the State Society and the component County Medical Societies. It will publish official announcements of these societies and furnish a general means of communication between their officers, committees and members. We wish it success.

SOME EXPERIMENTS AND CONCLUSIONS IN HYPNOTIC THERAPEUTICS.*

BY W. H. WALLACE, M.D.,
OF DISPUTANTA, VA.

My attention was first called to hypnotism in a medical way in 1898. In the summer of that year I met a lady who assured me she was a natural born "magnetic healer." She affirmed that by a few strokes of her hand she could put her husband (who was an invalid) into a sound sleep. He was subject to various neurotic pains, which she could always control by stroking. Numbers of her friends assured me they could feel a pecular thrill when she touched them. I had never heard hypnotism mentioned in my medical course, and had always considered it a humbug, but here were a number of reliable people whose word was not to be questioned, who assured me they could feel *something* pass from this lady's hand to their own. What was it? Animal magnetism, as she asserted? or hypnotic suggestion? It was two years later that I began some experiments on my own account. My wife was affected with pains along the course of the sciatic nerve, and one night I said carelessly, "Oh, I can stop that in two minutes." I massaged both nerves lightly and told her her pain was gone; she moved them and felt no pain. She was not nearly so much surprised as I was. From this I concluded that hypnotism was not all humbug, so I purchased a set of good books on the subject and went to work to investigate more thoroughly. I have been thus prolix, to show that it was no hypnotic grand-stand play that brought me to a study of the subject, and that, at the beginning, I was anything but prepossessed in its favor.

Following instructions of Yerkes, of Harvard, I could readily hypnotize hens and discovered that some were more easily influenced than others. I met a young lady who told me she had been hypnotized several times, and I had no difficulty in putting her in the rigid, so-called cataleptic state.

After this I began to use my newly-acquired accomplishment freely as a means of relieving pain in all suitable cases, such as neurotic headaches, insomnia, and all kinds of obscure functional nervous troubles, and as an aid to hasten the effects of chloroform in anesthesia. I was successful in stopping night-sweats of phthisis, and put a patient (who had an idiosyncrasy for morphine) to sleep in the agonizing crisis of locomotor ataxia.

I wish now to call attention to a few, to me, remarkable cases before attempting to draw conclusions:

Case I.—Mrs. G., aged fifty-three years, married, no children; had been an invalid for twenty years when first coming under my care, and had all the clinical symptoms of phthisis and a bountiful supply of the *Bacillus tuberculosis* in her sputum. She was very weak; had precordial pains and could not sleep. I had exhausted the pharmacopœia in endeavoring to give her rest. It occurred

* Read before the Thirty-fourth Annual Session of the Medical Society of Virginia.

to me one evening that this would be a heroic test case for hypnotism. I put her in a comfortable position, and in ten minutes I had her sleeping soundly and she slept all night. As long as she lived I could make her comfortable by a few strokes of my hand and a few firm words of suggestion or command. Her husband suffers from locomotor ataxia, and has an idiosyncrasy for morphine, which crazes him. I had run the gamut of anodynes in his case when the crisis was on and had given him very little relief. In his case I used a revolving mirror, fixing the light behind him and getting the mirror in such position that it would flash the rays of light in his eyes. He was in such pain that his cries could be heard a block away. To quiet his craving for something to take I gave him five grains of bromide, and fixed his attention on the mirror, explaining to him that the rays of light would paralyze the ocular nerves, etc., and he would soon fall asleep and be free from pain. Difficult as he was to control, in fifteen minutes he was sound asleep, and he slept for two hours. I then put him to sleep again, and he slept all night without rousing. In the room with this patient was a half-grown puppy, and the colored nurse called my attention to him just as I had got my patient asleep. The puppy had been attracted by the bright revolving mirror, and when I looked at him he was blinking and unsteady on his legs, and in a couple of minutes fell over against the hot stove, which awoke him.

Case II.—The next case I wish to speak of was a stout woman, aged sixty-two years. She suffers with valvular trouble, and has asthmatic attacks at times. She became frightened and precipitated an attack one day while I was away. When I saw her, some three hours later, she had the most irregular pulse I ever felt, and had an abiding fear that her end was near. I got her to bed, and with a few quiet strokes over the temples and appropriate suggestions she went to sleep, and now, after some nine months, she has not had a recurrence.

Case III.—My next case worthy of mention was one of delirium tremens. Mr. M., a married man and a farmer; had at one time been a pillar of the Church, but, like many pillars, had fallen. When in his cups, that seemed his chief grief. When I went to see him, he was in a particularly bad fix, his horses were running away with him and deacons were putting him out of church. He would not take medicine nor allow me to use a hypodermic, and he was too powerful a man to think of using force with, so I decided to try hypnotism. It was out of the question to try ordinary methods, because I could not hold his attention; so assuming a tragic air, I shouted to him, "Don't you see the water around your feet, they are trying to drown you, get to bed, quick!" He took the suggestion readily, and seemed in abject terror of the water. I was then able to control him, and in half or three-quarters of an hour had him asleep. I went home hoping to hold him till morning, but he awoke in two hours, though more rational, and in a couple of days was over his attack. He had another spell six months later, however, and committed suicide.

Case IV.—A Bohemian young man came to me from Pennsylvania with some obscure nervous trouble. He had been to see several specalists and was growing progressively worse. He had vague pains in calves of legs and thighs, weak back; was unable to work and had constant headache and roaring in his ears. Strange to say, none had thought to examine his ears; and I had been treating him for two weeks before it occurred to me to look for impacted cerumen. Both auditory canals were packed full, and how he could hear so well with them in that condition is a mystery to me. I syringed them out, and thought I had solved the riddle of his case, but in a few days he began to grow worse. I had his eyes examined and his vision was 20—20, no trouble there. I had been using electricity, superheated hot air to spine and cold douches. As a last resort, I tried hypnotism and in ten days I had him out in the field at work. Of course, I gave him tonics in conjunction with the other treatment; but the fact remains, that he did not commence to mend till I had hypnotized him several times.

I have thus briefly run over these cases to show effects, or, better, results. I will now try to draw some conclusions. I am not quite prepared at this time to follow the latest teaching as to the action of, or cause of hypnotic sleep. Nearly all modern writers claim that suggestion is all there is to it. I cannot believe this; I have hypnotized chickens by holding their feet, laying them on a board and putting a grain of corn in front of their beak. I can see no suggestion in this. As I have stated before, I involuntarily put a puppy to sleep with a revolving mirror. To my mind, the whole keynote of the phenomena is concentration; suggestion only helping to hold the mind or concentrating it.

It would not surprise me at all to find the students of the science (if I may so call it), at some later date go back to the teaching of Mesmer, and show that there is a psychical force that produces the phenomena we call hypnotic sleep.

I do claim, however, (and believe that further research will bear me out), that hypnotism has a definite physiological action, as much so as any drug of the pharmacopœia. So far as I have been able to find out no one has ever advanced this theory, and thereby hangs the secret of much of the neglect of one of the most powerful weapons in the armamentarium of the physician. I do not claim that it is a cure-all. I do not even believe that every physician is capable of exercising it successfully, but to a large body of the profession it is a wonder-worker in a great many cases. Up to this time, as I have said, it has been used empirically and mostly by quacks and advertisers; but because a quack uses a thing that is good it is no reason that we of the regular profession should ignore it, and if we can show that its effects are at all times the same or nearly the same—that all patients submitted to its action behave the same, I think we are justified in claiming that it has

a definite physiological action. I believe that its action is simply this: attention is concentrated on, or by something to such a degree that strain is put on the vasomotor nerves, resulting in a paresis of the whole vasomotor system, with a consequent diminished blood pressure. A patient subjected to hypnotic suggestion invariably (in my experience) starts off with a rapid small pulse, a little later it gets harder, slower and full, and as hypnosis comes on tension diminishes, and if you put one of them into deep somnambulism, the pulse is flaccid and slow. As I said before, blood pressure is diminished, what results? Blood is very easily determined to any portion of the body, because the vessels are wide open, with but one exception. I believe that whereas in physiological sleep the brain is anemic, in hypnotic sleep it is congested, for though the body is asleep the brain is still active and blood is bound to circulate more freely where there is most activity. Now, then? I concentrate a patient's attention on a rapidly revolving mirror, and suggest to him sleep. I say you are bound to sleep if you keep your gaze on it. He concentrates his attention on it, all else is blotted out, his whole attention is on that mirror, and sleep dominates him; blood is pouring into the brain, where activity alone is going on; surroundings get hazy and he does not notice anything but that dominant suggestion, sleep, and as a result he is soon asleep. Well, what happens then? We will suppose he is a man who has been troubled with a mild neuritis of the leg and foot. He is sleeping soundly, with a brain turgid with blood. I say to him, "You feel no pain in your leg or foot." His attention is now directed to that foot, there is a rush of blood to the particular brain center that presides over that limb, the brain cells of that center are crowded together and massaged against one another by the flowing blood, gradually nutrition there (because of increased metabolism) is increased.

The center that appreciated pain no longer appreciates it, not by any wonderful psychical process, but by a simple reasonable physiological process. Well, some one says, "You have not removed the source of irritation; when the patient wakes the pain will return, you have not increased metabolism in the limb." I am not too sure of that. True, if there is any material organic change of the tissues that is causing the irritation, it may not be possible to cure it except by extended treatment, and perhaps not then; but at the time you draw the patient's attention to the painful area metabolism increases in that part as much so as in the center presiding over it. Tissue changes take place, the parts are flushed out because of diminished tone of blood-vessels, and the minute vessels are capable of taking up larger extraneous particles than they would at any other time; and they are so taken up and swept out of the tissues and into the general circulation and on, out of the system.

To recapitulate then, my idea is that the phenomenon of hypnotism in its action on the human economy is a definite physiological process. It has its psychic side to be sure, but I do not care to discuss that at this time. I believe that it cures pain and many functional troubles by a process as easily understood as is the physiological action of—say digitalis or opium. I know that some of my deductions are not capable of proof, but how many things in medicine are? I have carried on my studies and experiments during the exigencies of an extensive country practice, and this thesis is far from what I would have desired. But if it will help to stimulate research in this field by some better prepared and more fortunately situated than myself, and if I have succeeded in demonstrating that hypnotism is a therapeutic agent too good to be left to charlatans, my labor will not have been in vain.

MEDICAL PROGRESS.

MEDICINE.

The Overlaying of Infants.—England exceeds all other countries in the proportion of deaths of infants under one year of age from suffocation in bed with their parents or nurses. WILLIAM W. WESTCOTT (Brit. Med. Jour., Nov. 7, 1903), coroner for N. E. London, reports that during the recent ten years there were 15,009 overlain infants in England and Wales. In Liverpool, during one year, there were 143 cases out of 160 inquests. In London the death rate from this cause is shamefully high, although probably the records show a somewhat lower rate than is actually the case, on account of the difficulty of diagnosing the conditions. The factors aiding and establishing this diagnosis are skin discolorations, pressure marks, the most important of which is flattened nose. In addition to this there are often present the well known signs of suffocation. It is probable that if a drunken mother should nurse her infant before going to sleep, the baby may be more or less stupefied by the alcohol in the milk, and so fall a prey to easy suffocation. These cases very naturally are not apt to give the grosser signs, because they may succumb to the simple pressure of the bedclothes. The English law allows parents to take infants to bed with them. It probably gives opportunity for a vast number of infanticides. Under the old penal code of Prussia, mothers were forbidden, under pain of imprisonment, to have children under two years of age sleep in bed with them. In Westphalia, and, indeed, throughout France and Germany, this form of infantile death is almost unknown. This happy condition probably arises because in that section of the continent the drunken mother is unknown. In London, Liverpool and Glasgow, however, she is a frightfully common sight. In the present condition of the English laws it is not possible to secure conviction of parents for the manslaughter of infants by overlaying, and the appalling frequency of the condition would seem to justify the enactment of suitable preventive laws.

Results of Organotherapy in Addison's Disease.—Cases of Addison's disease are so uncommon that it seldom occurs that any one physician sees a sufficient number of these patients to make his conclusions in regard to the value of treatment of any avail. E. W. ADAMS (The Practitioner, Oct., 1903) has collected 97 cases from the English, French and German literature, all of which have been treated for a time at least with some form of extract from the suprarenal gland. Many of these were treated but a short time, and some of them were practically moribund when the treatment

was begun. Furthermore, it was, of course, impossible to be certain of the diagnosis in all cases on account of the numerous sources from which they were taken, and also because the diagnosis is frequently a very difficult matter even to the most skilled. Autopsy records of a considerable number were also obtained to confirm the diagnosis whenever possible. The results show that 7 cases were made distinctly worse by treatment; 43 cases derived no real benefit; 31 cases showed marked improvement, and 16 were apparently permanently cured. The best results were obtained by the use of the first gland, given by mouth, and the fluid or solid extract given in the same way. Three cases of suprarenal grafts were all apparently made worse by the operation. It would appear, therefore, that there is a certain class of cases of Addison's disease which derives indubitable benefit from the exhibition of some form of suprarenal substance, though in any given case it still remains impossible to determine its probable response to the treatment. Although the chances of recovery are comparatively slight they are certainly much better with this mode of treatment than with any other.

General Views on the Etiology of Infectious Diseases.—In the first of the series of Harben lectures delivered in King's College, London, F. HUEPPE (Jour. of State Medicine, Nov., 1903) treats of the general causes of infectious diseases. In addition to the two opposed views—namely, the one supported by Pasteur and Koch, that an "animated contagium" is the external cause of a specific infective disease, and the other, that the "diseased cell" is the entity of the disease, as enunciated by Virchow, there still exists a third opinion. It is recognized by Simon, Farr and Parkes in England, and Pettenkofer in Germany, that external conditions are of great importance in the propagation of infectious disease. The author was the first to try to bring these three theories into harmony with one another, and demonstrated that for an infectious disease to break out, the cells of the body, the pathogenic microbes and the external conditions must be in energetical or dynamical relations with one another. The author believes that individual "predisposition" rather than a predisposition of the species or race, as maintained by Baumgarten, is a fact, and must be accepted by all naturalists. Rather than predisposition being a negative fact—negative, from the absence of immunity—it is something positive, and a "correlate" to the immunity. Predisposition of the protoplasm corresponds to the constitution of the molecules in chemistry. Protoplasm, as active molecule, cannot be recognized by the analytic and synthetic methods of chemistry, but it can be recognized by the biological method—by means of the reaction to a "stimulus." The latest physical theory of the action of the enzymes teaches that the stimulus, as enzyme, can produce an effect if it has corresponding groups in the living molecule. This also applies to the meaning of the specificity of the pathogenic bacteria as stimuli. "Physiological assimilatory stimulus agrees with the specific cell protoplasm as a good key fits a lock, whereas pathogenic bacteria agree with the same specific protoplasm as a false or skeleton key fits a lock, which lock becomes either destroyed or opened." Infection and immunization is the biological method of recognizing the predisposition which cannot be demonstrated directly. The predisposition of the child is different from that of the adult. Moreover, besides his inherited nature, man also has a "second nature," dependent on the normal evolution and on the influences of environment and internal causes. Thus, cold, heat, damp, hunger, thirst, mechanical injuries, alcoholism, or other forms of intoxication, constitutional illnesses (as diabetes or rickets) can augment the predisposition to infectious disease. Pathogenic bacteria have no unvarying specific character; *e.g.*, bacteria of diphtheria, pneumonia, etc., have often been found in the bodies of healthy men; the same specific bacteria do not affect all animals alike with the same typical disease, diphtheria bacilli may cause local diphtheria, or acute blood-poisoning or paralysis; similar symptoms can be evoked by entirely different germs, which can also produce identical anatomical changes. Illness is a function of changeable predisposition, changeable stimulus, and changeable external condition. Each one of these factors can vary from minus to plus, from nought to infinity. If one mark illness "I," predisposition "P," stimulus "S," and condition "C," one has, as a general expression, $I=f$ (PSC). If the conditions are constant or without special value, then $I=f$ (PS). Every one of these factors can be composed of several factors, as, for instance, the predisposition "P" can be inherited (p) and acquired (p'); then $I=f$ (p+p', SC). Recognizing disease as a function and being able to express the different factors mathematically as curves, pathology acquires a certain degree of exactitude. The different methods of hygiene as statistics, post-mortem examinations, chemical researches, physical and biological experiments must all work together in order to recognize the different single factors.

Caisson Illness and Diver's Palsy, an Experimental Study.—The following conclusions were derived by L. HILL and J. J. R. MACLEOD (Jour. of Hygiene, Oct., 1903), from the experimental investigation of this subject: Compressed air above 5 atm. lessens the CO_2 output, and lowers the body temperature in mice, rats and young rabbits. Oxygen at and above 1 atm. has the same effect. It is a sign of oxygen poisoning. Compressed air at 10 atm. is more damaging—at least to small animals—than oxygen at 2 atm. Compressed air increases the loss of body heat both because it is a better conductor and because it is saturated with moisture. The saturation of the air with moisture in caissons does not prevent evaporation from the body, because the skin temperature is above that of the air. The wet air by damping fur or clothes increases loss of heat. Highly compressed air may possibly interfere with the diffusion of CO_2 from the alveolar air, and may, owing to increased friction, hinder the passage of air in and out of the air-tubes. The nitrogen output in dogs is not altered in any noteworthy degree by exposure for six hours to 8 atm. air. Inflammation and consolidation of the lungs are produced by exposure to 8 atm. air for over twenty-four hours. One and a half atm. of pure oxygen has a similar effect. The higher the oxygen tension the more rapidly does the inflammation ensue, *e.g.*, 6 atm. O_2 produces marked congestion in two hours. It does not seem likely that inflammation of the lungs should be produced in the pressures and times of exposure usual in caissons. Excised frog's hearts, muscles and nerves are not rapidly poisoned by even 50 atm. O_2. A heart will beat more than an hour exposed to this pressure. The vagus nerve endings appear to be paralyzed by such exposure, while inhibition can be obtained by stimulating the crescent. All animals investigated, vertebrates and invertebrates, are instantly convulsed and killed by exposure to 50 atm. O_2 convulsions are frequently produced in vertebrates by exposure to 4—5 atm. O_2, while exposures to 6—25 atm. O_2 produces dyspnea and coma, and the convulsive stage does not usually appear. Cleaning movements, salivation, gaping, jerky, deep respiration, are symptoms which precede the convulsions, and coma soon follows them. With air pressures up to 12 atm., convulsions are not observed. Salivation, dyspnea and coma are the symptoms. The blood gases increase in compressed air or oxygen according to Dalton's law, but

the process of complete saturation of blood and tissues takes some time. The circulation is unaffected mechanically by compressed air. The cause of caisson-sickness is the escape of gas bubbles in the blood-vessels and tissue fluids on decompression (release of compression). An animal exposed for four hours to 8 atm. air and quickly decompressed is like an opened bottle of soda water. The fluids of the body generally effervesce. The effervescence can be studied in the circulation of the frog's web or bat's wing, the animals being enclosed in a suitable chamber. It takes a little time for the bubbles to grow to an appreciable size. Recompression causes the bubbles to go into solution, and if applied quickly enough the circulation recommences. The bubbles after rapid decompression can be seen post mortem in the blood-vessels, in the heart, retinæ, aqueous humor, connective tissue spaces, etc. The alimentary canal is blown out with gas. The bubbles produce cyst-like cavities in solid organs, *e.g.*, in the central nervous system, the liver. The cells are compressed round these cysts. In the case of oxygen, an animal may recover after an extraordinary amount of this gas has been set free by decompression. The nerve cells are not killed by the oxygen bubbles, and the animals are convulsed and exhibit hyper-reflex-excitability. The varying symptoms of caisson-sickness are due to the varying seat of the air-emboli. Young men escape the disease owing to the elasticity of their tissues and greater facility of collateral pathways of circulation. By the choice of suitable men, and proper regulation of the period of compression and decompression, caisson and diver's sickness can be avoided.

Granuloma of the Nose, Due to Iodide of Potassium.—A case of specific disease of the nose and larynx and a granuloma on the tip of the nose, is reported by C. P. CROUCH (Bristol Med.-Chir. Journal, Sept., 1903). The chief point noted about this rare condition is that its nature is apt to be overlooked, and consequently the iodide to be continued. In this case the diagnosis was rendered more difficult by the fact that some undoubted iodide spots on the forehead disappeared, while the granuloma increased. Acne due to iodide is apt to become tuberous. Iodide rashes are more apt to occur if there be either cardiac or renal disease present, causing a defect in elimination. An iodide rash may begin in twenty-four hours in pot. iod., gr. v t.i.d. The case reported is also of interest, inasmuch as the patient attributed his condition to "grease" from which a horse under his care was suffering.

Lime Dust in Pulmonary Tuberculosis.—In order to determine the practical value of inhalations of lime dust in pulmonary tuberculosis, a series of tests have been made by P. RECKZEH (Berl. klin. Woch., Nov. 9, 1903) in eight patients which presented various degrees of involvement from slight apical lesions to extensive double cavity formations. It has been asserted that workers in factories where lime in the form of dust was present, were markedly benefited if they were afflicted with tuberculosis. The patients on whom the tests were made were subjected to daily inhalations of finely powdered, freshly calcined lime, for periods of five minutes or longer. The results obtained were not encouraging as the objectionable features far outweighed any possible benefits. Chief among these were the increased irritant cough, nausea and sometimes vomiting, loss of appetite, a feeling of lassitude, burning pains in the chest and severe headaches. No objective changes in the pulmonary lesions could be detecte

Value of Sanitarium Treatment in Tuberculosis.—The permanency of the beneficial effects of this method of treatment have been made the subject of a research by L. BROWN (Jour. Am. Med. Assoc., Nov. 21, 1903). He has made an analysis of fifteen hundred cases discharged from the Adirondack Cottage Sanitarium from two to eighteen years ago and adheres to the classification of the types of the disease proposed by Trudeau. In all, 33 per cent. of cases are alive, 38 per cent. are dead, and 29 per cent. are untraced. Of those alive, 22 per cent. are well, 4.6 per cent. are arrested, 3 per cent. relapsed and 3.7 per cent. are chronic. Taking all the cases traced (1,066) together, 31 per cent. are well, 6.5 per cent. are arrested, 4 per cent. have relapsed, 5.2 per cent. are chronic and 53.3 per cent. are dead. Of the incipient cases 66 per cent. are well and 21 per cent. are dead. Of the advanced cases, 28 per cent. are well and 52 per cent. are dead; while of the far advanced cases 2 per cent. are well and 90 per cent. are dead. No doubt, however, more of the untraced cases are dead than these figures would indicate. In 10 cases it is known that death was due to other causes than tuberculosis.

A New Method for Diagnosing Typhoid.—The clinical value of the Gruber-Widal serum reaction is more or less restricted by the necessity for laboratory facilities and the time required in getting results. In order to make the Widal test more practical, the following conditions, according to M. FICKER (Berl. klin. Woch., Nov. 9, 1903), must be fulfilled: (1) the place of the living cultures of typhoid bacilli must be filled by a substitute as the physician in general practice usually does not possess the former; (2) the preparation must contain the specific agglutinating properties and possess keeping qualities; (3) the reaction must be visible to the naked eye, must always result uniformly and not require any extended period for its observation, and (4) must be possible at ordinary room temperatures without the use of an incubator. The author believes that he has devised a method which fulfills these requirements. The test fluid and its action are described but the method of preparation is not indicated. It is a slightly cloudy, sterile fluid, which when kept dark and in a cool place, has remained effective for nine months. The serum to be tested is diluted ten times with normal salt solution. Of this 0.2 c.cm. are placed in one test-tube and 0.1 c.cm. in another. To the first is added 0.8 c.cm. and to the second 0.9 c.cm. of the diagnostic fluid. In a third test-tube is placed 1 c.cm. of fluid without the addition of any serum. The test-tubes are then stoppered, thoroughly shaken and set aside in a cool dark place for from ten to fourteen hours. When held against a dark background, the positive reaction is indicated by a clearing of the fluid, while the agglutinating materials have sunk to the bottom of the tube. The results attained have corresponded exactly with those secured with previous methods and in judging the presence or absence of typhoid fever, the same precautions must be observed. He claims that the method has been successfully used in several large German clinics. The preparation is at present made by Merck of Darmstadt.

Recent Literature on Diphtheria.—A review of the publications upon the subject of diphtheria during the past year reveals several interesting questions, for the solution of which considerable evidence is offered. C. B. KER (Practitioner, Oct., 1903) quotes freely from a paper by Martan who believes that there is much less discrepancy between clinical and bacteriological results than is sometimes asserted and that this discrepancy is often due to errors on the part of the bacteriologist or physician. He holds that the diagnosis can be made clinically with a probability which amounts to almost

certainty and at least with sufficient accuracy to determine whether antitoxine is indicated or not. He does not appear to believe in a simple catarrhal diphtheria and when no membrane is present the question of diphtheria may be dropped. The relationship of true diphtheria to follicular tonsillitis is an interesting point and Marfan believes that certain true cases, especially when the larynx is involved first, do present the appearance of tonsillitis. In his wards 80 per cent. of the cases of follicular tonsillitis accompanied by laryngitis were diphtheritic, whereas under one-half per cent. of follicular cases with no laryngeal symptoms were found to be diphtheritic. Some of the causes of death are carefully studied by Babier and he urges the importance of cardiac thrombosis and tuberculosis. In 69 autopsies he found ante-mortem thrombi present in the heart in 37 or 52 per cent. In 19 cases in which bacteriological examinations were made the diphtheria bacillus was found in the clots in 18 instances. The patients usually die suddenly during convalescence. He also believes from numerous autopsy findings that diphtheria lights up old tuberculous processes. Perhaps the most useful contribution upon the subject of treatment is the suggestion by Cairns who has used the antitoxine by intravenous injection in the severe laryngeal and nasal forms. He recommends large doses, 20,000 to 30,000 units, in order that the large doses of toxine which have evidently overcome the system may be neutralized. If given subcutaneously the lymphatic glands seem to prevent the serum being absorbed rapidly enough to prove successful. The cases of bronchopneumonia complicating diphtheria are now recognized as being usually due to the Klebs-Löffler bacillus and the rapid absorption of toxin in these cases also can perhaps best be withstood by large intravenous injections.

A Classification of Leucemia.—It is now generally believed that all forms of leucemia must be looked upon as a hyperplastic tumor-formation in those organs which produce leucocytes. A lymphatic leucemia results where the cells without granules are chiefly involved and a myelogenous and lieno-myelogenous type where the granulated cells chiefly proliferate. The last class generally develops more slowly; in fact most cases of acute leucemia are lymphatic. It is probable that the cells of the lymph-nodes and spleen may become granulated so that theoretically participation of the bone-marrow is not absolutely necessary in the myelogenous form, though practically it almost always occurs. To properly understand the pathology of blood-diseases, F. P. WEBER (Virchow's Archiv, Vol. 174, No. 2) finds it convenient to divide them into the following classes: (*a*) Proliferation of lymphocytes in the bone-marrow, without migration of the cells into the circulating blood: Myelogenous pseudoleucemia, myelogenous lymphosarcoma, lymphadenomatosis ossium and multiple myeloma of lymphatic type; (*b*) like above, but with passing of the cells into the blood: myelogenous lymphocythemia, including some cases of acute lymphatic leucemia; (*c*) new formation of lymphocytic cells in the lymph-nodes and lymph-adenoid tissues in general, without migration into the blood: lymphatic or splenic lymphadenoma or pseudoleucemia. The chronic cases are characterized by the presence of more fibrous tissue. (*d*) Like above, but the cells enter the blood: lymphatic or splenic lymphocythemia. (*e*) Proliferation of cells on the type of medullary myelocytes, without migration: myelogenous pseudoleucemia. Some cases of multiple myeloma also belong here. This class is characterized by the presence of Bence-Jones' albumosuria. (*f*) Like above, with abundant cells in the blood: myelogenous or spleno-myelogenous leucemia. Occasionally the character of a leucemia changes from myelogenous to lymphatic without involvement of the lymph-nodes; in such cases the process has become more acute so that the medullary cells have not had time to develop granules. Why in one case the cells leave the organs, and in the other not, is not known but possibly the cells in the latter class have lost their power to wander or to continue their existence in the blood.

Relation of Leucemia to Tuberculosis.—A few cases have recently been reported in which these two diseases coexisted, but considering the frequency of tuberculosis the association of the two diseases is important more on account of its rarity than its frequency. W. J. SUSMANN (Practitioner, Oct., 1903) was able to collect twenty-five instances in which there was little or no doubt of the presence of both diseases and he is able to show that it was usually the lymphatic form of leucemia which appeared, although, in general, the splenomedullary form is the more common. An interesting point upon which he dwells is that the two diseases probably exert an antagonistic influence over each other. The most striking difference between the two diseases is the presence of a marked mononuclear leucocytosis in leucemia and an absence of leucocytosis in tuberculosis. This leucocytosis must be inimical to tuberculosis by increasing the amount of nucleo-albumin present in the body and by increasing the phagocytic action of the blood. The myelocytes possess this latter characteristic to a greater degree than either of the other kinds of leucocytes and this is offered as a reason why splenomedullary leucemia is even much more rarely associated with tuberculosis than lymphatic leucemia is. This theory of the power of nucleo-albumins to inhibit the growth of tubercle bacilli has been made use of by the employment of nitrogen and nitrogenous products as the remedies *par excellence* for the tubercle bacilli. Urea has tnus been used. The ferment-treatment has also been introduced, being administered as pure yeast. Pure yeast-cells are distinguished by the large amount of phosphorus which they contain and the nucleins, obtained from yeast cells, differ very little from those of animal cells. In leucemia this excess of nucleins is already present.

Diseases Simulating Typhoid Fever.—Many authors described various diseases which simulated typhoid very closely, and the meaningless term of paratyphus was proposed by some as a designation for this class of affections. D. D. PLETNEFF (Roussky Vrach, Oct. 18, 1903) reports two cases in which typhoid had to be excluded only by a bacteriological examination as clinically there were typical symptoms of the disease; an incubation period, fever of a remittent character and always high, enlarged spleen, prominent nervous symptoms and diarrhea. In neither of the cases could the Gruber-Widal reaction be obtained. The secretions contained the colon bacillus.

Endothelioma of the Pleura.—Endothelial cancer of the pleura has been described by many authors under various names such as pleuritis carcinosa, lymphangitis carcinomatodes, lymphangitis prolifera, etc. It was considered as an inflammatory process because the swelling took its growth principally from the local elements, whether found primarily or after it had generalized, and also because of its diffused character as well as the various clinical symptoms pointing distinctly to inflammation, which in its final stages brought about tissue alterations that produced the picture of a cancer. According to A. I. BOURTZEVA (Roussky Vrach, Oct. 18, 25, 1903) all authors agree that it is the endothelial cells of the lymphatic vessels that give rise to the formation of the endothelial tumors of the pleura. The case which forms the basis of the author's investigation was that

of a man of forty-one years who was admitted to the hospital complaining of difficulty of breathing, cough and general debility. The dyspnea began about three years ago, and kept constantly increasing. He underwent evacuation of the pleural cavity three times during this period, but experienced only temporary relief therefrom. He presented marked cyanosis; the left side of the chest was considerably enlarged, the intercostal spaces smooth. Percussion elicited perfect dulness over both apices on either sides, the dulness also extending downward. The respiratory murmur was absent in a great part of either lung. The expectoration contained many bacteria, principally staphylococci; no tubercle bacilli. The pleura was tapped and 1,350 c.cm. of an opalescent fluid was extracted. Relief was obtained which lasted but a few days, the patient's condition grew gradually worse, and he finally died of what seemed to be paralysis of the heart. The autopsy showed the patient to have suffered from an endothelioma of the pleura, which owed its origin not only to the endothelial cells of the lymphatic vessels and spaces but also to the perithelium of the blood-vessels. The growth had also invaded the upper lobe of the adjacent lung, and some portions of the mediastinum.

Primary Malignant Intrathoracic Tumors.—The clinical manifestations may be divided into those of centripetal and those of centrifugal extension, according to T. N. KELYNACK (Med. Press and Circ., Nov. 4, 1903). The general evidences of these growths when their development is rapid, may be marked. The distinct cancerous cachexia is, however, not usually pronounced. Clubbing of the finger ends is occasionally a prominent factor. Under certain conditions of extremely rapid growth, however, a carcinoma may run a course very similar to that of acute lobar pneumonia. Dyspnea occurs usually very early and may be the only symptom. It may be persistent, or paroxysmal; it may or may not be varied by posture and may be inspiratory or expiratory; it may be perceptible only upon exertion. Orthopnea develops in a large part of the cases. Cough due to pressure is a very early symptom. It is apt to be very characteristic and may accompany alterations of voice. Hemoptysis, when present, is an important symptom. The sputa examination, however, does not usually give any help. Cyanosis is often marked. The nervous derangements due to the involvement of the sympathetic central nerve symptoms by pressure are manifold. Prominent among these is the contraction of the pupil, which may be accompanied by ptosis. Occasionally the brachial plexus may be involved. The lesion must be differentiated from abscess and syphilis, from bronchitis from peraphetic and pericardiac conditions and from aneurism.

Radium in Medicine.—Hardly has the medical profession recovered from its surprise at the wonderful results obtained by the application of X-rays to medicine when another even more potent remedy is placed before us by the discovery of radium. The beneficial results to be expected from X-rays, together with the limitations of its use, are now being thoroughly worked out and recognized by its extended and varied application to numerous pathological conditions. Although the phenomenal results at first hoped for the X-rays have not been entirely realized, yet this agent has fully proven its claim as a useful and potent remedy in the treatment of many diseased conditions. The price of this new substance, $2,700,000 a pound, prevents its very extended use in medicine at the present time, but the price will undoubtedly be diminished when better methods of separation have been found. Its wonderful activity in emanating heat and light rays is not accompanied by any discoverable loss of weight or diminution in energy and hence the principle of the conservation of energy seems to have met a stumbling block when applied to the properties of this metal. S. G. TRACY (N. Y. Med. Jour., Oct. 24, 1903) shows how active radium is when brought in contact with living cells and germs. A small piece carried in the pocket for a few hours will cause a severe burn resembling closely that from prolonged exposure to the X-rays. It is powerful in killing cultures of bacteria, even when exposed for a short time. Radium salts when brought near to the temples or closed eyes cause sensations of light. Patients blind for years have been made to see slightly. Very good results have been reported from the use of the salts of radium in cases of rodent ulcer, superficial cancer, various kinds of skin disease and optic atrophy. In the treatment of tuberculosis of the lungs Soddy suggests that radium be dissolved in water. He says "that instantly all its emanations are evolved in gas and mixed with the air above the solution. These emanations can be stored in a gas holder and one-half the emanations will disappear every four days till at the end of three weeks all will be gone. The solution containing the radium will be found to be just as active as at the beginning and seems to have regained its potency during the three weeks." Inhalations of these emanations leave a thin film of radioactive substance in the lungs which exerts a germicidal power over diseased tissue long after the emanations have been exhaled. Experience has not yet taught us how much to expect from this method of treatment.

Diet of Bread and Fruit and Its Effects Upon High Blood-pressure, Dropsy and Obesity.—It has been found that a healthy person weighing about 140 pounds will require to eat 28 ounces of foodstuffs a day and of this 21 ounces may be taken as breadstuffs and 7 ounces as dried fruits. A. HAIG (Med. Rec., Oct. 31, 1903) shows what an elaborate and savory meal can be gotten up from breadstuffs, fruits and vegetables while, on the other hand, a more simple and easily obtained meal could hardly be desired. There is no doubt but what a large number of the chronic ailments which we are called upon to relieve are due to overeating, especially when a proteid diet is freely indulged in. The chief advantage of bread and fruit diet is seen in the collemic and high blood-pressure group of uric acid food poisonings. Such used to be called diseases and were reckoned under the names of headache, epilepsy, neuralgia, asthma, Bright's disease, dropsy and obesity. The great point in the relief of these troubles is the lowering of the blood pressure. By cutting down the fluids as much as possible and feeding on breadstuffs and fruit, a blood pressure of 150 to 160 mm. of mercury can be reduced in a week or two to 120 mm. of mercury with a correspondingly large improvement in all the forms of food poisoning. The washing-out plan of treatment by giving large quantities of water to drink usually fails, for it does not increase the elimination of uric acid and furthermore maintains the high blood pressure which is an important causative factor in the conditions. In many of these high blood-pressure troubles much good may also be done by temporary but complete abstention from both food and fluid, as this will produce in twelve to twenty-four hours, a fall of from 20 to 40 mm. of mercury in the blood pressure.

Alimentary Glycosuria in Children of Diabetic Persons.—Heredity undoubtedly is an important factor in the causation of diabetes which seldom develops suddenly or rapidly in a perfectly healthy individual. Since its symptoms do not usually appear until the disease has advanced to some degree, it is only by some chance such as an insurance examination that the cases are discovered in their early stages. A. LORAND (Practitioner, Oct., 1903) has carefully examined ten

cases of children or young adults, one of whose parents, at least, has a well-developed diabetes mellitus. It was found that although several of them showed no traces of sugar in the urine on a restricted diet they all showed distinct glycosuria when given a test meal containing from 250 to 300 grams of carbohydrates. Care was taken to eliminate the possibility of this glycosuria being due to the ingestion of any drugs. He believes that the majority of children of diabetic parents have inherited a certain defective power of dealing with sugar in their economy, and if this fact was known early in life their lives might be greatly prolonged by a careful regulation of their diet. He has also noticed in such persons the presence of acne vulgaris not only in the years of puberty, but also in full grown-up adults. Obesity was also frequent among them and according to v. Noorden this is a symptom of diabetic predisposition. This does not mean that all people showing these predisposing signs will have true diabetes, but if addicted for a long time to an irrational nourishment (containing an abundance of meat and sweet, amylaceous food), or if subjected to great psychical emotions they are much more liable than the ordinary individual to develop diabetes and the younger they are when this appears the more serious will be the prognosis.

SURGERY.

Some Peculiarities of Temperature in Appendicitis.—Several authors pointed out some time ago the great divergence of temperature in appendicitis between that taken per rectum and the axilla, the difference ranging between 1° to 2.9°, while in severe cases an increased frequency of the pulse was observed with a fall in the temperature. M. I. ROSTOVTZEFF (Roussky Vrach, Oct. 4, 1903) noted a maximum rise of temperature in light cases (namely, those that recovered without surgical interference), between four and six o'clock in the evening, while in a smaller number of these cases the maximum rise occurred at 9 to 10 P.M. On the other hand, in the more severe, operative cases, the highest rise in the temperature was noted at between nine and ten o'clock in the evening; the same rise was observed in the very severe, fatal cases. The author desires the above data to be considered as important, in conjunction with other symptoms, in the diagnosis as well as the prognosis of the case. He advises frequent temperature taking particularly toward evening, and in case of a rise between nine and ten o'clock in the evening our watchfulness should be redoubled.

Malignant Diseases of the Larynx.—Abernethy said: "Every operation which mutilates is a black spot on surgery." THERMISTOKLES GLÜCK (Med. Jour., Oct. 31, 1903), said that in operating upon the larynx, our first object must be to save life, our next to leave the patient in such a physical condition that the life thus saved was worth living. For some of the cases of syphilis and circumscribed cancer of the cords, the steps recommended are as follows: (1) A low tracheotomy is done; (2) a median incision is made through the skin and fascia, the sternal muscles are retracted and the larynx is exposed; (3) the thyroid cartilage and cricothyroid membranes are divided in the middle line and the two halves retracted with hooks; (4) a solution of cocaine and antipyrene five per cent, and carbolic one per cent. in water is applied to the anterior of the larynx and the growth is removed with scissors, knife or thermocautery, and plugs of iodoform gauze are placed in the larynx and fixed with a few points of sutures through the cartilage. (5) Between the fourth and sixth days the plugs are removed under anesthesia. In three weeks healing is completed and the patient is allowed to speak. The operator has patients who were operated upon fourteen years ago who are still able to lecture regularly.

Appendicular Toxic Nephritis.—This condition, although too little known, expresses itself by one constant sign—albuminuria. Prof. DIEULAFOY (Med. Press, Nov. 4, 1903) regards this lesion as one of extreme importance. The nephritis often escapes observation owing to the absence of obvious symptoms, more particularly in the event of the albumin being present in but moderate excess and where that most graphic symptom, the swelling in the region of the eyes is absent. In these cases the urine should be watched very carefully for granular casts, and if they are discovered, the prognosis is rendered much more grave. Albuminuria in itself does not always justify us in giving an unfavorable prognosis, but it is nevertheless one of the signs of impending toxemia and should be regarded as an important danger signal. This is not due to the nephritis alone, which in some cases may lead to anuria and to general intoxication of the organism. It is interesting to note the possibility that the nephritis due to appendicular toxins may be a factor in the etiology of chronic nephritis, or, indeed, spreading further, it may in cases of chronic appendicitis be a prominent factor in the etiology of general cirrhosis.

Treatment of Fractured Mandible.—So many methods have been devised in the interest of this frequent fracture as to show that the ideal has not yet been reached. STEWART L. MCCURDY (Ann. of Surgery, Nov., 1903) drills from the external surface into the sublingual cavity. The drill holes should be made between the apices of the second and third teeth in the line of fracture if possible, so as to guarantee firm anchorage. On being made they are threaded with a notched drill and the wire passed through from without into the mouth on one side. The free ends are twisted on the outer surface of the bone so as to bring the margins in perfect apposition. Iron wire is always used, being tougher, less irritating and in every way superior to silver wire. These patients soon learn to hold their teeth together, and the wire, without any other dressing, is left in for about six weeks. The question of feeding this class of patients is one of some concern. Where no teeth are absent, it has been customary to pass a glass tube back of the last teeth. If the curve is sufficiently marked, nutrition can be more readily maintained by the increased ability of the patient to close the lips and suck up fluids.

Prostatic Hypertrophy.—The rôle played by the enlarged prostate from its earliest symptoms until death closes the scene is purely mechanical. GEORGE W. HAWLEY (Ann. of Surg., Nov., 1903) concludes from the analysis of the problem of prostatic hypertrophy (1) that it is not the prostate, but the adjacent urinary tract which demands treatment; (2) that the direct cause of the interference with the urinary evacuation is the displacement of the outlet of the bladder resulting from enlargement of the retrourethral portion of the prostate; (3) that until the precise cause of prostatic overgrowth is known and successful preventive measures employed, one can only hope to relieve this condition by correcting the displacement; (4) that until an effectual method is devised, which is sufficiently safe and simple for application, before infection and disorganism of the urethral tract has resulted, surgery cannot bring any great relief; (5) that the logical mode of correcting vesico-urethral displacement by reduction is evinced by the fact that operative methods improve urinary evacuation by virtue of their power to reduce this displacement; (6) that while some of the methods partially, sometimes completely, accomplish reduction with comparative safety, and others entirely reduce it, but at con-

siderable risk, none does so with both safety and success; (7) that since the reduction of the vesico-urethral elevation is essentially a mechanical problem, reduction based on anatomical and mechanical processes should prove the simplest and safest. No method can be successful which does not permit of complete reduction for all degrees of elevation. The operations of Dr. E. W. Andrews and H. Delageniere are based upon correct principles, but do not go far enough. The author describes in detail a more complete technic for the downward reduction without injury to the bladder and urethra.

Renal Calculus Simulating Sciatica.—It is important that every person who is a chronic sufferer of malaria and who gives a history of having had it for a number of years, particularly if the patient be young, should be examined for possible renal calculus. H. E. BRUCE PORTER (Lancet, Oct. 17, 1903) records an interesting case in which a prominent practitioner had been misled into believing the case one of idiopathic sciatica, and had subjected the patient to the annoyance and futility of a three years' stay at Carlsbad. This patient became pregnant at the age of thirty-one years and during the whole period suffered intensely from a pain in the right side. The hands swelled so much that she could not wear her rings. She was given to understand that this was due to her pregnancy, and her urine was not examined. At the time of examination, four years after the birth of the child, the urine was loaded with pus, about three drams in twenty-four hours. It was free from tubercle. Sir Frederick Treves operated on the patient, and upon the removal of the kidney it was found to be nothing more than a mere shell containing at least 15 ounces of pus.

Upward Dislocation of the Foot.—The literature of this subject is extremely sparse. The saliant features of the condition are that the astragalus, retaining its normal relations with the foot, is driven upward between the tibia and fibula without fracture of either bone. PERCY W. G. SARGENT (Lancet, Oct. 17, 1903) cites a case from St. Thomas' Hospital. Reduction was accomplished under an anesthetic by simple traction on the foot. This dislocation is one of the most remarkable, because of the enormous strength of the ligaments uniting the parts. On the cadaver the dislocation could not be imitated until not only the interosseous, but the internal and external ligaments of the ankle had been divided. This seems to show that this accident had taken place in the case cited, although the recovery was complete. The more important clinical notes on this case are (1) the increase of the intermalleolar measurement; (2) the prominence of the heel; (3) the approximation of the maleoli to the plane of the sole; (4) the absence of fracture; (5) that the injury was not compound; (6) the extreme ease with which reduction was effected.

Splenectomy for Banti's Disease.—Osler describes this symptom complex as "a chronic affection, probably an intoxication of unknown origin, characterized by a progressive enlargement of the spleen, which cannot be correlated with any known cause, a marked tendency to hemorrhage, particularly from the stomach, and in many cases a terminal stage of cirrhosis of the liver, jaundice and ascites." C. H. LEVISON (Ann. of Surg., Nov., 1903) relates the interesting history of a case occurring in a young man upon whom he had previously operated for appendicitis and whom, after the development of the characteristic symptoms of Banti's disease, he was able to follow technically for eight months. The blood findings characteristic of Banti's disease are (1) oligocythemia, the average number of red cells being 3,500,000; (2) oligochromia, the low percentage of hemoglobin is fairly constant and is marked by a low color index. In pernicious anemia the contrary obtains. (3) leucopenia. This is quite constant. The leucocyte count is usually much under 5,000. The red cells in the differential count are of no value. Levison's summary of his case is as follows: First, that the disease was preceded by an infectious appendicitis. Second, that there were intervals of perfect health interrupted by profuse bleedings. Third, the exacerbations of temperature of the leucocytosis both indicative of some form of infection. Fourth, slate colored stools and diarrhea, evidences of a digestive disturbance. Fifth, severe pains between the shoulder blades, enormous quantities of morphine necessary for its relief. Sixth, the spontaneous disappearance of the ascites after a single paracentesis. Seventh, the splenectomy followed by the rapid increase in percentage of hemoglobin. Eighth, the appearance of normoblasts and megaloblasts in the blood subsequent to the splenectomy. Ninth, the rapid regeneration of a very abnormal blood. Tenth, the disappearance of the melanoderma. Eleventh, thrombosis of the veins of the neck. The author concludes that Banti's disease offers a favorable prognosis if operated upon early, death resulting if it be allowed to pass unoperated.

Hallux Valgus.—Tight-fitting or narrow-toed shoes are probably only a small factor in the causation of this condition. It seems to occur in people whose feet are of one type: Arch of the foot well formed, the extensor tendons of the great toes prominent at the metatarsophalangeal joints, the first phalanx of the toes extended and the distal phalanx flexed. J. G. SHELDON (Med. Rec., Oct. 24, 1903) believes that the tendon of the extensor proprius hallucis muscle by its insertion tends to abduct the big toe, and that as soon as the abduction begins this muscle acts with greater force. This muscle is always strong and is found tense in cases of hallux valgus. The operation which is recommended for this condition is the modified Dawbarn operation. The joint is exposed by making a flap, the convexity being upward and outward. Instead of resecting the whole head of the metatarsal bone, the inner one-half or two-thirds of the head is removed by bone forceps, the outer part of the head being undisturbed. The extensor tendons of the big toe are then split and divided so as to allow a lengthening of from an inch to an inch and a half. The advantages of the operation are that a movable joint is obtained without shortening of the toe, while lengthening of the tendons prevents recurrence of the deformity.

Modified Operation for Inguinal Hernia.—In doing a radical operation for hernia it is almost universally admitted that the separation of the hernial sac is the most difficult part of the operation, and the trauma which is often caused may result in unpleasant consequences. S. PETRULIS (Archiv f. klin. Chirurg., Vol. 71, No. 4) advocates the method first proposed by Kasumowsky in which the sac is left in place. The operation was done in twenty-one cases without recurrences, and consists in the main of a resection of the hernial sac at its neck, after the latter has been sufficiently separated from the cord, and a closure of the opening in the usual manner. In two cases there was a subsequent accumulation of fluid in the sac after the eleventh day, but this disappeared in about two weeks without any complications.

Effect of the X-rays on Epithelial Tissues.—An investigation relating to the penetrating power and the effect on normal tissues of the Roentgen rays has lately been made by G. PERTHES (Archiv f. klin. Chir., Vol. 71, No. 4). Among other things he was able to show by microscopical examination that the action of the X-rays was much more intense on the epithelial cells

than on the adjoining connective tissue. It must be assumed, however, that the carcinoma cells are altered to a greater extent than those of the normal epidermis, for in this way alone can the rapid proliferation of normal epithelium be explained which covers over the small defects resulting from the disintegration of carcinomatous nodules. The author also claims that the rays possess greater penetrating properties than have hitherto been attributed to them. In two cases of inoperable mammary cancer, degenerative changes could be detected in the deeper layers of the growth after exposure to the rays. In a number of other instances warts were covered with skin from corpses and exposed, with the result that in every case the wart disappeared. Another series of experiments was concerned with the effect of the rays on active growth. It was found that when newly hatched chicks were exposed to the rays, their growth was markedly inhibited. On the side exposed the development of the feathers and the growth of the long wing bones was appreciably inhibited when compared with the other side. It seems that the rays in this case are not intense enough to kill the cells, but merely inhibit growth. Whether this is due to direct action on the cells or is produced by the intermedium of chemical products, still remains an unsolved problem.

Question of Early Operation in Appendicitis.—An interesting contribution to this widely discussed subject is made by Prof. E. PAYR (Archiv f. klin. Chir., Vol. 71, No. 4), in which he gives due credit to American efforts in this particular branch of surgery. From a careful study of the subject, and the result of his own experience, he finds that the statistics of the so-called early operation for appendicitis are based on widely varying collections of material, and cannot, therefore, furnish conclusions which are applicable in all cases. An increasing number of surgeons acknowledge the necessity of early operation in that class of cases where the appendix is directed in a medial direction from the cecum, and thus affords a readier means for the spread of an inflammatory process. The author believes that it is important to develop this point in topographical diagnosis, and to bring into proper relation the clinical picture with the pathological changes. He concludes that if the appendix has been removed before perforation or abscess formation has taken place, the operation cannot be designated as an "early" one, but should be considered as having been undertaken in the nick of time. If the operation is done after perforation occurs, the chances of recovery may be compared to those in perforating gastric ulcer or a ruptured gall-bladder.

Case of Duodenojejunal Hernia.—A very novel pathological condition, which has hitherto been apparently unnoticed in the literature, is described by A. NARATH (Archiv f. klin. Chirurg., Vol. 71, No. 4). A laparotomy was undertaken in a young woman in whom the clinical diagnosis of tumor of the pyloris or gall-bladder had been made. Exploration showed the presence of an old ulcer of the stomach followed by pyloric stenosis, hour-glass contraction of the stomach, and also a very peculiar displacement of the entire small intestine. The latter did not occupy its usual position below the transverse colon, but ascended upward back of the stomach, perforated the lesser omentum and then descended in front of the stomach, the transverse colon and the greater omentum down to the lower part of the abdominal cavity and the pelvis. The colon was normally placed and fixed, and only the cecum was displaced toward the center and upward. When the small intestine was reflected upward, the lower section of the ileum could be detected coming through an opening in the median line at the root of the transverse mesocolon. The entire small gut could be readily pulled through this opening and replaced in its normal position. The author explains this extraordinary condition by assuming that originally there was present a retroperitoneal hernia, the sac of which ruptured upward and back of the stomach, forming a true left-sided hernia of Treitz. The hour-glass contraction of the stomach may be explained by the action of the loops of gut which surrounded the organ in a circular manner and the author also calls attention to this condition as an etiological factor in the production of hour-glass contraction. Operation in the case in question consisted in replacing the abnormally situated gut and sewing up the opening through which the gut had found its way. The pyloric stenosis was treated by doing the usual form of pyloroplasty and the patient made a good recovery.

Foreign Bodies in the Male Bladder.—As is well known, no pathognomonic symptoms exist whereby to determine the existence of this condition. Exact diagnosis is possible only by objective methods. Occasionally the diagnosis is easy—when, for example, the physician has had the misfortune to break off an instrument in the bladder during manipulations, but as a rule, conditions render a diagnosis on subjective data very questionable. MAXIMILIAN HIRSCH (Deut. Zeitsch. f. Chir., Sept. 1903) outlines the following directions for examination: (1) Palpation, under anesthesia bimanual through rectum. Perfected by v. Volkmann, but useless if the prostate be enlarged; (2) sounding has a wider field. By this method much can be learned, not alone as to the existence of a foreign body in the bladder, but yields information as to the number, size, shape, consistence, position and motility; the presence or absence of incrustation or pocketing; (3) lithotrite, an excellent idea of the consistency of the foreign body may be had from the use of this instrument and very often particles come away attached to the blades. (4) cystoscope. This instrument enables position, orientation and identification of the body, as well as the condition of the bladder wall, as to inflammation, bands, etc. (5) X-rays. These are particularly useful in cases, particularly of extreme stricture of the urethra. Unfortunately this method is useful in those cases only where the foreign body is of such a nature as to cast a shadow. The therapy of this emergency depends entirely on full diagnosis of existing conditions. There are two methods of choice: The wet and the dry. The history of these for the past fifty years is interesting. After the introduction of the lithotrite the percentage of removals via the urethra rose from 27 per cent. to 82 per cent. With the advent of aseptic technic it has returned to 27 per cent. The choice of the dry methods is determined (1) by the relation of the sizes of the body and the urethral orifice to each other; (2) the body must be freely movable; (3) it must be free from sharp sides or points; (4) it must not be too brittle; (5) the urethra must be free from extensive stricture; (6) extensive cystitis contra-indicates; (7) if iron, a magnet may be used. The wet method, either by the supra- or infrapubic route is indicated (1) when the dry fails (2) in all other conditions, except those cited above. It should be remembered that the infrapubic route does not open the bladder proper, being virtually an external urethrotomy. Hence the suprapubic path is usually preferred.

Treatment of Traumatic Hemorrhage of the Spleen.—The difficulties attending the treatment of this condition are commented on by N. SENN (Jour. Am. Med. Ass'n., Nov. 21, 1903), who proposes a method which he has successfully experimented with in dogs. In a number of these animals clean-cut, incised wounds

of the spleen were made, calculated to give rise to a maximum amount of hemorrhage. The edges of the wound were then seized with broad forci-pressure forceps, which were very slowly closed. This action displaced the splenic pulp from the loose net work of connective tissue, which, in turn, is condensed into a broad, firm band in which the larger blood-vessels become entangled. The forceps may be left in place for several minutes and then the crushed margins of the wound are sutured together with catgut. In all cases (7) subsequent autopsies showed that the wounds had healed with good results, and that very few adhesions were present. Based on the results of these animal experiments he regards this as the most favorable procedure yet devised.

Resection of the Intestine.—A series of nine cases is reported by G. T. VAUGHAN (Am. Med., Nov. 21, 1903) with five recoveries and four deaths. Five were done for strangulated hernia with three recoveries and two deaths, and four for tumor of the colon, with two recoveries and two deaths. The methods were by the Murphy button, five with three deaths; and suture three, all recoveries. In one case the ends of the intestine were left ununited. The button was used in the worst cases, while the suture was used only in the most favorable cases. The high mortality (44 per cent.) is accounted for by the severity of the cases operated upon.

Thrombosis of the Femoral Veins and Laparotomy.—The majority of the writers on this subject consider that infection is the most probable cause, says E. R. SECORD (Am. Gyn., Oct., 1903), though, as Willy Meyer puts it, the infection need not start from the operation field, but may originate elsewhere especially in the intestinal tract. In a large percentage of the cases, however, neither wound infection nor inflammatory disturbance in other parts of the body can enter into the discussion, since nearly all the wounds followed a typically aseptic course, and in many at least there was no evidence that there were infective lesions elsewhere. The elevated temperature is not in itself an evidence of an infective origin (Meyer). All writers on this complication have emphasized its late occurrence. Nothing new can be offered regarding the treatment of this state when it arises. Elevation of the limb and moist heat to favor the formation of the necessary collateral circulation seems best to meet the indications. Lennander's suggestions as to prophylaxis by elevation of the foot of the bed would seem difficult to carry out. Moreover, it would surely make 999 patients uncomfortable in order that one might have the chance of escaping this complication. Again, Van Buren Knott reports 326 cases of laparotomy treated postoperatively by elevation of the head of the bed (Fowler's position), without any increased tendency to phlebitis. It would seem advisable to support the abdomen more securely, especially after removal of large tumors, than is now the general practice. After hernia operations it would appear best to exercise a certain degree of direct pressure over the wound area, probably best carried out by a well-applied spica of crinoline. No single etiological factor is alone responsible for the occurrence of this complication. The rôle of infection in otherwise non-infected cases does not seem to be an important one. Conditions of sudden decrease of pressure independent of the operation probably exert a causative influence. Treatment should be prophylactic by avoiding all unnecessary traumatism, hemorrhage or a sudden decrease of tension, by having the wound area well supported by firmly applied bandages. So far as the author is aware, there has been no mortality in the reported cases, but the occurrence of pulmonary embolism in a certain proportion of cases warns us that this termination is not an impossible one.

Intussusception in Children.—Much has been said regarding the difficulties of diagnosing this condition, and it is altogether likely that, in some cases, especially in the enteric variety, this is true. But in three cases reported by R. E. SKEEL (Am. Gyn., Oct., 1903) the diagnosis was at all times easy to make, was entirely typical; there were paroxysmal, colicky pains of great severity, prostration, vomiting, tenesmus, and bloody stools in all. In addition, the abdomen was soft and could be palpated with ease, so long as the child did not cry. A tumor could be found in the same locality in each of them, but was frequently elusive in that it could be distinctly made out and the next moment would escape entirely from the grasp, only to be found again after a somewhat prolonged search. An extremely severe attack of colitis was the only other condition that could be confounded with it, but the soft, flat abdomen would have been sufficient to have at once put one on his guard. The positive evidence afforded by the presence of a sausage-shaped tumor was, of course, of great value in arriving at a diagnosis, but it was merely confirmatory. It is an open question whether cases reduced by mechanical measures would not have reduced themselves, but these methods are of value in classifying cases at the earliest possible moment, and indicating the necessity for surgical intervention in those which fail to yield to such measures. All arrangements should be made and consent gained before the operation, and a fair trial of air or water should be given. If they fail to cause complete disappearance of the tumor, no time should be lost, for the earlier the operation the more effectual will be its results. Repeated attempts at mechanical reduction are not only useless, but dangerous, and give more time for swelling an edema of the intussusception and for adhesions to occur, and perforation and peritonitis to take place, and this loss of time might convert a simple into prolonged and complicated operation, ending in death.

Surgery of the Ileocecal Valve.—The fact is well established that the pyloric and rectal valves are liable to inflammatory disease, with consequent hypertrophy and contraction of the tissues and attendant partial obstruction of the tract. N. STONE SCOTT (Am. Jour. of Obstet., Nov., 1903) thinks that it would be most natural to suspect the other one of the three, the ileocecal valve of similar tendencies. Again the pyloric end of the stomach is rich with glandular structures, and it is in this part of the stomach that we find gastric ulcers with the resulting cicatricial contractions and stenoses. So of all parts of the intestine there are more glands at the ileocecal valve. Both in typhoid and tuberculosis there are to be found more ulcerations than elsewhere. The medical history of the subject is remarkable for its silence. Legg reports but six cases of non-malignant stenosis of this portion of the intestinal tract. Schröder showed two cases at autopsy and Sayo reports but two others. The symptoms and signs of a contracted ileocecal valve are quite obscure, there being no pathognomonic symptoms, but merely a combination of those noted for appendicitis and obstruction of the intestine proper. A chronic ileocecal obstruction will more likely be mistaken for a chronic appendicitis than for chronic obstruction. The following are a few of the more important signs and symptoms: Periodical pains at McBurney's point, with thickening of the tissues, sometimes to such an extent as to form a good-sized tumor. Tenderness of the same point sometimes accompanied with rigidity of the abdominal muscles. Pain in the stomach, acid or gaseous eructions, and other dyspeptic symptoms. Disturbances of the bowels,

usually constipation, or diarrhea, followed by constipation. Evidences of distention of the lower end of the ileum, the presence of which is best evidenced by the hard tumor in the iliac fossa, which comes and goes, usually accompanied by colic-like pains, sometimes disappearing with gurgling sounds. Not all these symptoms are present in every case; in fact, the larger majority of them may be absent, thus leading to greater obscurity. The etiology of the cases is usually either hyperplastic valvitis or ulceration, the result of typhoid or other disease. Since the ileocecal contraction sometimes appears coincident with the more common chronic appendicitis, and especially as many of the symptoms are identical, it is right that the surgeon should examine the valve while operating for appendicitis. Non-malignant obstruction of the ileocecal valve, though not more prevalent than heretofore, will be far more frequently recognized, and therefore rectified, in the future than in the past.

Intra-abdominal Rupture of the Urinary Bladder.—In concluding his very elaborate article on this subject J. B. ZELDOVICH (Roussky Vrach, Oct. 18, 1903) reports the case of a woman who was kicked in the abdomen and suffered at once from severe pain, incessant vomiting and retention of urine. The condition of the patient when conveyed to the hospital was that of a severe shock, with a subnormal temperature, rapid, small pulse, dry tongue, inflated and painful abdomen. As the urine drawn by the catheter did not contain any blood a diagnosis of a traumatic peritonitis was made, but which abdominal organ was injured could not be definitely settled before the operation. Laparotomy decided the diagnosis; the injured organ was the ruptured urinary bladder. This was sewed up, and a comparatively uneventful recovery followed. The author embraced the opportunity of giving a very interesting historical review of the subject, which will undoubtedly be very instructive to the specialist, but which does not admit of abstraction.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

Inflammatory Foci in Bone.—By injecting the vascular system of the various bones with a mass made up of mercury triturated with oil of turpentine, E. LEXER (Archiv f. Chir., Vol. 70, No. 1) was able to secure Roentgen-ray pictures which clearly showed the course of the vessels and also the presence of the site of different infectious emboli. It was found that tuberculous foci in most cases are the result of infectious emboli or small masses of bacteria. Their favorite site is in the epiphysis or metaphysis of the long bones, although foci in the diaphysis may also arise from emboli which find their way through the nutrient artery. The connection between a trauma and a tubercular focus may be explained by a scattering of an old bone focus, although there is a possibility that a tubercular embolus or mass of bacilli may be accidently deposited at the site of the injury to the bone. Pyogenic foci are likewise of embolic origin, at least in part. The prevalence of staphylococci as causes of a purulent osteomyelitis may be explained by their tendency to be propagated in small masses. In this way a true bacterial embolus may be formed at the point where a single coccus is deposited, especially in the minute capillaries in the region of the zone of growth in the long bones. In both cases the greater vascularity of the bones of young persons plays an important role in determining the presence of inflammatory lesions.

Mortality Due to Congenital Malformations.—An attempt at an analysis by modern statistical methods, of certain biological aspects of the death-rate in man due to congenital malformations, has been made by R. PEARL (Medicine, Nov., 1903). He bases his studies on the mortality returns in the last United States census, and the specific problem investigated may be stated in the form of a question as follows: Is there any evidence that, with respect to all abnormalities sufficiently great to cause the death of the individual possessing them, one sex is more variable than the other? An analysis of these figures shows that the mean age of death from fatal congenital malformations of the sorts included in the census returns, is essentially the same in man and woman. Hence it may be safely concluded that the mean intensity or degree of the malformations is not essentially greater in one sex than in the other. The variation in the age at death from such malformations, as measured by the standard deviation and the coefficient of variation, is significantly greater in women than in men, and hence we may conclude that in intensity or degree of the malformations woman is more variable than man. These figures apply, of course, only to the United States returns, and may not hold among other peoples, and it would, therefore, be impossible to formulate any general rule, and it is necessary to study each particular species living in a certain environment. The author also calls attention to the fact that the mortality from congenital malformations discussed in this paper forms an excellent example of the action on the human race at the present time of natural selection "by the elimination of unfavorable variations."

Amitotic Cell Division.—Formally it was believed that amitotic cell division was restricted to the lower animals, but recently numerous observations have been recorded where direct cell division was found in both normal and pathological conditions in the higher vertebrates and man. R. CAMINITI (Virchow's Archiv, Vol. 174, No. 1) found almost all the cells in a rare solitary adenoma of the liver multiplying by the direct process. The cells resulting from amitosis are probably equally as resistant as those generated by karyokinetic division, and it is wrong to suppose that they are only found in degenerative processes. The factors which determine the kind of division are yet unknown. Instances of karokinesis in the avertebrates, where amitosis is the rule, are also common.

Amyloid Tumors.—The first instance of amyloid tumor of the lung is reported by G. HERXHEIMER (Virchow's Archiv, Vol. 174, No. 1). The patient was an old man who had long suffered from hoarseness, and rather suddenly developed an empyema of obscure etiology. At autopsy one lung was studded with numerous small foci of greenish-yellow, hyaline appearance. The empyema probably resulted from suppuration of one of these tumors. The larynx was so altered by a similar pathological tissue that the true and false vocal cords were entirely destroyed. Microscopic examination revealed an alveolar connective tissue in the meshes of which a structureless tissue was imbedded, which gave a distinct amyloid reaction. Amyloid degeneration always begins in the media of the arteries; in many cachectic conditions it occurs as a general lesion, but local tumors are exceedingly rare. Sometimes part or the entire organ is involved, or syphilitic scars, malignant tumors and abscesses show amyloid foci, but real tumors have only been described in the bladder, conjunctiva and upper respiratory passages. They are always covered by normal mucous membrane, and at the periphery the lumen, adventitia and intima of the vessels are often apparent. The pathogenesis of these tumors is still unsettled; some look upon them as a result of a syphilitic inflammation, while others believe there is first a connective tissue new growth, which secondarily undergoes amyloid degeneration. In the author's case syphilis was de-

nied. The amyloid substance probably results from an exudation into the interstices of the connective tissue; it consists chiefly of proteid matter and chondroitin sulphuric acid, so that it may possibly be derived from the elastic fibers of the organs. The author found these fibers well preserved, but pushed apart in the peripheral parts, but in the older portion they gradually disappeared. In conclusion a new selective stain is described. The sections are placed into a concentrated solution of ponceau in alcohol, sodium hydrate and water for half to several hours, then washed in 70-per-cent. alcohol and stained with hematoxylin. The amyloid will appear pale or dark red, the nuclei blue and fat more yellowish-red.

Thyroid Gland in Smallpox.—The lesions of the thyroid gland in smallpox do not differ from those found in other acute infectious diseases, according to H. ROGER and M. GARNIER (Virchow's Archiv, Vol. 174, No. 1). They are characterized by an increase in colloid secretion so that the vesicular arrangement is absent, and the proliferating cells are placed closely together without order. Hemorrhages within the parenchyma are not infrequent. With exception of the latter the changes are purely functional and it is a peculiarity of the thyroid gland that functional disturbance gives rise to altered histological appearance. In severe cases the hypersecretion may be followed by an exhaustion of the gland, so that little colloid is present. When the patients survive the acute infectious disease, this exhaustion may explain subsequent thyroid disease as yet of doubtful origin.

New Method of Preserving Specimens.—By placing anatomical specimens into a supersaturated solution of ammonium sulphate and then passing illuminating gas through the fluid, M. CLAUDIUS (Virchow's Archiv, Vol. 174, No. 1) could preserve the natural colors more perfectly than with other methods. The gas converts the hemoglobin into the carbon monoxide compound and the salt preserves this and fixes the specimen by coagulating the albumin. It is necessary to preserve the organs in an airtight jar since the air will again break up the compound and give rise to a more brownish discoloration. All shades between red and brown can be obtained by regulating the amount of air. Bile pigment is also preserved and the normal consistence is retained. If animal specimens are to be preserved, it is simply necessary to kill the animal with illuminating gas and then place the organs into the salt solution.

Heat and Local Irritants.—In attempting to account for the beneficial action of both these agents, a series of practical experiments have been made by K. WESSELY (Archiv f. klin. Med., Vol. 71, No. 2). His point of view is based on the assumption that the antibodies in the blood serum have an important action in the beneficial effects produced by an hyperemia. This required an answer to the question as to whether the antibodies of the blood serum entered the tissues from the vessels in greater quantities during the production of a hyperemia. His experiments were conducted on the eyes of rabbits. After carefully shaving the eyelids, applications of hot water were made, the temperature of which was gradually increased from 50° to 60° C. It was found that the albumin content of the aqueous humor was increased from about $^1/_{40}$ per cent. in the normal condition, to $^1/_{10}$ and even ½ per cent. As the hyperemia of the vessels in the ciliary bodies resulted in this increased transudation of serum albumin, it is natural to suppose that the total quantity of antibodies was also increased. This was also experimentally proved—a rabbit was treated with subcutaneous injections of dog's blood. The humor from a normal eye had no effect whatever in dissolving the corpuscles from a dog's blood, but that taken from an eye which had been subjected to warm applications for half an hour, readily dissolved them. The same effects were also observed in experiments made on the conjunctiva. The conclusion drawn from these experiments is that the therapeutic effects of an hyperemia are due at least in great part to the increased collection of antibodies in the affected tissues or organs.

NEUROLOGY AND PSYCHIATRY.

Extensive Brain Loss Without Impairment of Intellectual Faculties.—The famous crowbar case has always been cited as evidence that there may be severe injury to the frontal lobes without much disturbance in brain activity. Confirmation of this belief is found in a case reported by W. KEATE (Med. Rec., Oct. 17, 1903). A miner was struck by a premature explosion while standing bent over the hole. Both eyes were blown out, the bones of the roofs of the orbits were driven into the brain, and the skin and muscles from the forehead were torn off. There was a hole in the frontal bone about the size of a ten-cent piece. The brains were exuding from these openings. The openings were smoothened and enlarged and twenty small stones and several pieces of bone were removed from the anterior portion of the brain. At least an ounce of cerebral matter came away. The patient has never for one moment been unconscious. He answers all questions intelligently and accurately describes the details of the accident. He has never complained of pain, and says that his head feels paralyzed.

General Paralysis of the Insane.—Some extremely interesting data on paralytic dementia are communicated by B. S. GREIDENBERG (Russ. med. Rundschau, No. 14, 1903) covering a period of observation extending over ten years of very active asylum practice. He has some years ago pointed out that paralytic dementia is on the increase, and especially so among women, the proportion being 10 to 5, and never less than 10 to 4. Attention was also drawn to the fact that the disease is no longer a city disease, for it is gradually invading even villages and small towns. In the city the affection grows what he calls more and more "democratic," attacking the lowest strata of society, again largely women. As the chief causative factors of general paralysis the author considers syphilis, alcohol and heredity; although syphilis is found in a preponderating proportion of cases, it nevertheless cannot be considered as the only etiological factor of the disease. The present article embraces the results of investigations covering a period of twelve years, during which time the author had under treatment the enormous number of 7,090 insane patients, among whom 800 were general paralytics, forming 11.28 per cent. of the entire number. It is interesting to note that among the low classes of society the women form a majority of patients attacked with general paralysis, while higher up the number of men is twice that of women. As regards occupation the common unskilled laborer heads the list, followed by the peasant, merchant and official, professional, skilled laborer, and so on down the list. Sixty per cent. of the entire number were made up of married people, while unmarried formed but 15 per cent. Etiologically syphilis was found in over 50 per cent. of the cases, alcoholism in 38 per cent., the rest was heredity, psychical emotions and traumatic influences.

Manhattan Dermatological Society.—The following officers were elected for 1904: I. P. Oberndorfer, M.D., President; E. L. Cocks, M.D., Vice-President; A. Bleiman, M.D., Secretary and treasurer.

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HERBERT SPENCER.

IN common with all scientific men the members of the medical profession have good cause to mourn the passing of Herbert Spencer. Although he was not a contributor to medical science in any but the most general way, he was the great exponent of the philosophy of all science—the one man who has done the most to dignify the claim of science to be the final arbiter and adjuster of the thoughts of men. In the death of Mr. Spencer the world loses the last of that great group of scientific leaders of whom, with Darwin and Huxley, he may be said to have formed a great triumvirate in the English-speaking world.

The great merit of Herbert Spencer, if we do not misapprehend him, was not so much in the specific results of his labors as in his method. All his conclusions will not go unchallenged, but in the vast survey which he took of the domain of human knowledge he supplied a scientific organon which will survive so long as men remain true to the teachings of inductive science. Spencer was an evolutionist before Darwin, and in the principle of evolution he found a method which is not confined to mere biology, but which is fruitful in results in psychology, sociology and ethics. The whole panorama of human thoughts and human interests passed in review before that master mind, and were subjected to an analysis which points to the final attainment by mankind of a satisfactory scheme of the knowable. Beyond that impassable bourn Spencer never attempted to penetrate. He was satisfied with the universe as it lay before him. His merit consists preeminently in the fact that he taught men the limits of rational science.

That there will be a reaction from Spencer is inevitable, and the signs of it were visible for some years before his death. The metaphysical and theological mind will not rest content with the knowable. It must seek to penetrate the veil—which possibly only hangs in front of a blank wall. The fate of science, and with it possibly the fate of modern civilization, may depend more than we perceive on the courage with which scientific men adhere to the principles of Spencer. That the battle is not yet won must be apparent to the student of the tendencies of the times. There are reactionary forces at work always and their activity makes all the more deplorable the loss of this luminous and gigantic mind.

Already it is pointed out with a kind of gleefulness that Spencer's work was not without flaws. His psychology and his sociology do not always stand the test of criticism and increased knowledge. We are told that he was not an original investigator—that he was a bookman, a schoolman, who merely took what others gave him. Such criticism merely skims over the surface of his work. Beneath all lies the substructure of pure thought, and over all lies the illumination of a great beacon light of scientific method. The details can be altered or shifted as the progress of science may require, but the system will remain a true reflex of human knowledge.

In his personality Herbert Spencer was the type of the modern philosopher. As was said of Marcus Aurelius, he lived without delusions. In his death the world suffers an irreparable loss, but his bequest to mankind is an example of high living and accurate thinking, which the world will ignore at its peril. For the medical profession he was an example and an inspiration, and it owes him the tribute due to a great scientist.

UNCHARITABLENESS OF THE CHARITY ORGANIZATION SOCIETY.

THE Charity Organization Society has done much to assist the medical profession of this city in its efforts to restore to health those sufferers

from disease who are unable to pay for necessary care and treatment. The scope of the work of this organization is very broad, and the assistance it furnishes to those in ill health is but one of its aims. Yet the doctors connected with our dispensaries and charitable institutions are fully alive to the great need of more help in caring for the sick-poor, and welcome and encourage any and all who offer their time, or money, or influence. Perfect harmony should certainly exist between the doctor, who has since the time of the father of medicine, been the friend of the unfortunate, and those who would be philanthropic and charitable.

It is, therefore, with deep regret that we notice a most uncharitable utterance in "Short Stories," a little book published by the Charity Organization Society and sent out with their recent appeal. The sixth story is headed, "The Story of How We are Disappointing Doctors." It is a tale of kind treatment and appropriate medical care given by a nurse, with happy results, to a sufferer from consumption. We do not find in the story itself any character such as a "disappointed doctor," and the inference would be that the writer thinks doctors are disappointed by having cures take place.

Charities, the weekly publication of this organization, will doubtless try to make amends editorially for this uncharitableness toward a profession which is nothing if not charitable. It is not that medical men care for their own feelings —they are too broad-minded for that—but such a heading is repulsive to all who have felt the sympathy and kindness of a physician—and who has not?—and the appeal is likely to bear little fruit.

We do not believe Mr. de Forest, Mr. Morgan, Mr. Bannard or Mr. Devine would have permitted this error had they seen the proof sheets.

THE NEW ANTITUBERCULOUS SERUM.

NOTWITHSTANDING the almost total failure of Marmorek's antistreptococcus serum to accomplish the remedial effects originally claimed for it, the announcement that the young Austrian bacteriologist who, for nearly ten years, until quite recently, has been connected with the Pasteur Institute in Paris, had discovered a new serum for tuberculosis, attracted world-wide attention in medical circles. On November 17 last, at the meeting of the Academy of Medicine in Paris, Marmorek made a definite announcement of the details of the method by which his new serum is prepared and the line of thought that has led him up to its discovery. We have had an opportunity to see an early copy of his original paper, and while we fear that his first announcement of results is, as is usually the case with remedies for tuberculosis, overenthusiastic, we feel that our reader's interest in the subject and certain suggestive details of the biology of the tubercle bacilli and its toxin justify our giving the new remedy and theory some attention.

Many of those who were present at the International Medical Congress at Paris in 1900 will recall the fact that Marmorek presented a paper to that body in which he described the various types of tubercle bacilli which he had classified in his laboratory at the Pasteur Institute. He dwelt particularly on the cultural characteristics of the microorganisms and demonstrated that tubercle bacilli retained their primitive characteristics only for a short time after being transferred to an artificial medium. It is in the tubercle bacilli grown in artificial media that the toxin called tuberculin, originally discovered by Koch, is formed. There are many reasons for doubting that this is the real toxin produced by the tubercle bacillus when it grows in animal tissues. Small amounts of tuberculin produce no reaction in healthy human beings. They produce, however, a very serious reaction in those suffering from even minimal lesions of tuberculosis. Finally, small injections of tuberculin produce very little effect on animals or human beings suffering from very severe forms of tuberculosis. Marmorek considered that this series of contradictions quite justified him in rejecting the notion that tuberculin was the true toxin of tuberculosis.

His effort was to secure the growth on artificial media of tubercle bacilli that would retain their primitive characteristics. In human beings and in animals the tubercle bacillus normally has its habitat either in leucocytes or in giant cells. Marmorek accordingly tried to grow the tubercle bacilli in the presence of leucocytes freshly obtained from animal tissues of living animals. He failed, however, to secure the persistence of the primitive characteristics of the tubercle bacilli by this method, as it is very difficult to secure growths of the bacilli. His next step was to prepare a leucotoxic serum. This was secured by injecting the white cells of small animals into the calf and afterward withdrawing its blood serum. On this he was able to secure a rather

abundant growth of tubercle bacilli. He had noted, however, that in laboratory animals, as also in human beings, in cases of generalized tuberculosis, the liver is usually the last organ attacked and is often found free from the disease. There seems to be some special resistive quality in its substance then. He argued that this quality could be used to increase the vitality of tubercle bacilli.

Accordingly, to his leucotoxic serum he added bouillon made from liver substance to which a slight amount of glycerin was added. Grown on this glycerinated leucotoxic liver bouillon the tubercle bacilli did not thrive well except by careful selection of what seemed to be hardy colonies. Bacilli that did grow, however, retained their primitive characteristics much longer than on any other artificial medium and failed entirely during their growth to produce any tuberculin, though they did produce another characteristic toxin. By the use of graduated doses of this toxin, Marmorek was able to obtain some immunity to tuberculosis in the lower animals, so that after a time the leucocytes were not only englobed, but digested tubercle bacilli were injected into the animal and so kept it immune from the effects of the microorganism.

By graduated doses of this product the blood serum of the animal acquired antitoxic qualities and this could be used for the protection of other animals and for hastening the cure of tuberculous lesions, especially in rabbits, which are not so sensitive to tuberculosis as guinea-pigs. Very large doses of the serum have to be employed for this purpose, but these animals present little resistive vitality to the disease, and in the larger animals and man it was hoped that their natural resistive powers would so aid the action of the serum as to require smaller doses. In nearly two thousand cases now the serum has been used on human beings in the hospitals of Paris and in various parts of France. Necessarily, at first only hopeless cases could be secured for purposes of observation. Even with regard to these cases the results were so satisfactory as to tempt physicians to further experiments.

Many of the symptoms even of tuberculous meningitis are relieved by the injections of the serum. The paralysis lessens, the coma disappears, the fever is less marked and the vasomotor symptoms are diminished. So far, however, no case of meningitis has been cured. In severe cases of pulmonary tuberculosis with cavities and abundant expectoration, with many bacilli, the beneficial effect is noted very soon after the injections have begun. The expectoration lessens in amount, the number of bacilli decrease and the patient's general condition improves. Some of the apparently hopeless cases are practically cured, though sufficient time has not elapsed to absolutely announce a cure. In milder cases of pulmonary tuberculosis, the effect is immediate and striking. Hectic fever disappears rapidly under the treatment and night-sweats and the loss of appetite consequent upon the fever disappear with it. Hectic fever, far from being the contra-indication to the use of the serum, constitutes a very favorable condition for the demonstration of its efficacy and these cases have been particularly sought out by Marmorek and his assistants in order to make the value of the serum clear.

It is in cases of surgical tuberculosis, however, that the serum is claimed to give the best results. In complicated Pott's disease, with abscesses and fistulæ, rapid improvement is noted shortly after the injections are begun. Hip-joint disease is as favorably affected as is Pott's disease, and abscesses are absorbed without delay and any unfavorable sequelæ under the influence of the antituberculous serum. Marmorek considers most of the cases of idiopathic pleurisy as of tuberculous origin. In this he is justified by many bacteriological tests of the injection of apparently the simple serous transudate of pleurisy into animals with the consequent development of tuberculosis. Pleurisy is rapidly benefited by the serum in Marmorek's hands. The exudate is rapidly absorbed, the pain and discomfort, and especially the dyspnea, are diminished and the patient's general health, if at all run down, improves under the serum injections.

Unfortunately, in the hands of observers outside of France the new serum has not proved so beneficial as in its inventor's. Some German investigators have even reported harmful results from its use. Marmorek's resignation from the Pasteur Institute is said to have been due to a disagreement with his colleagues over the preparation of the serum for commercial purposes, its exploitation in the press, and some doubts as to the results obtained with it. Generally, in Paris medical circles there is an air of incredulity with regard to it. While the subject is of interest it is doubtful if any great hopes should be raised because of it. Some of the work done may be as valuable as it is interesting and suggestive. As Marmorek himself says, at the conclusion of his article, many more observa-

tions under varying circumstances will have to be made before its true place in medicine can be appreciated. Though life is almost as short as in Hippocrates' time, art is quite as long, and we must be patient.

THE PROTOZOON OF SCARLET FEVER.

BEFORE the Boston Society of Medical Sciences, on Tuesday evening, Dr. Frank B. Mallory described, with the aid of microphotographic lantern-slides a protozoon which he supposes is the infective cause of scarlet fever. The supposed animal was found in the skin of four cases of this dire disease, sometimes in the lymph spaces, but most abundantly in the epithelial cells of the corium close to the epidermis.

In many essential respects the organism is somewhat like that now known to be the occasion of malaria. It appears in two forms, one a radiated rosette and the other a granular form with a knotted reticulum not unlike that of the nuclei of certain animal cells. The rosettes are apparently at first about two micromillimeters in diameter, circular in appearance or often elliptical. On the center of each is a small rounded mass which stains opaque with methylene blue. Radiating from this central mass are from ten to eighteen segmented spindles each with an enlargement at its peripheral end. In what appear to be later stages of development of this object the rosette has enlarged somewhat and the segments separated from each other, while in still later stages some of the now strongly club-shaped segments have become loosened from the central mass and appear as independent dots of deeply stained tissue. Later on these seem to have developed granulations, and arranged themselves often in clumps of four. There are evidences in the appearance of these segments that when fixed in the Zenker's fluid they were in ameboid movement. The later stages of the rosettes and clumps often have a diameter of ten or twelve micromillimeters.

Dr. Mallory found it difficult, in many cases of the disease, to find these bodies, the skin area being so large. No desquamative stage showed any, and they could not be found in any of the liquid discharges of the patients. The protozoa seem especially abundant in the papillæ of the skin, and in the superficial lymphatic vessels. For this new parasite their discoverer suggests the name *Cyclastis scarletinalis,* as fairly descriptive of their form. That these objects are not artefacts appears from the circumstance that of three bits of skin from one case, all stained in the same vessel at the same time, one specimen had many of the rosettes, one few, and one none, while in the very numerous preparations of skin similarly made in the study of the germ of smallpox nothing of this nature whatever could be discerned. Dr. Mallory closed this, his preliminary report, by saying that while he personally believed this to be the infectious agent of scarlet fever it had not as yet been actually proven. To his large audience and numerous observers of his photographic preparations made from cases, the impression was strong that the occasion of this now most feared of children's infectious fevers has indeed at last been detected, and that, almost in the act. If so, another of the bêtes noires of parents is probably started on the road to vanquishment by the skill and energy of modern medicine, although until some medium on which a pure culture of protozoa may be raised is discovered, the production of a certain antitoxin for scarlet fever, as for smallpox, may be delayed.

ECHOES AND NEWS.

NEW YORK.

Gift for Public Charities.—A merchant of Maiden Lane who recently aided in the conviction of a thieving public stores employe received from the Government a check for $500. This he has divided into parcels of $100 each and given to the following charities: The Police Pension Fund, the Montefiore Home, the Presbyterian Hospital, the United Charities, and the Educational Alliance. A very neat tribute to a very worthy cause.

Lectures on Alcohol and Opium Inebriety.—Dr. T. D. Crothers, of Hartford, Conn., Professor of Mental and Nervous Diseases at the New York School of Clinical Medicine will deliver a course of four lectures on "Inebriety from Alcohol, Opium and other Narcotics," January 5 and 6, 1904, at 4 P.M. and 8 P.M. in the hall of this school, 328 West Forty-second Street, between Eighth and Ninth avenues, New York City. The medical public are cordially invited to attend.

To Vaccinate New York.—The Board of Health in this city is taking vigorous steps to prevent an outbreak of smallpox in New York, and to that end has appointed 64 new inspectors, who will co-operate with the large force of regular inspectors in searching for persons who have not been vaccinated. Many cases of smallpox have been reported lately in Philadelphia, Pittsburg, Allegheny, and other cities in Pennsylvania, and the New York City health authorities are determined that a similar outoreak shall not be felt here. Dr. Lederle said last Monday that the additional corps of 64 inspectors had been engaged purely as a matter of precaution. "There is not," he said, "any reason to believe that this city will be visited by an epidemic of smallpox. Our purpose is to nip the disease in the bud, and the new members of our corps will assist the other inspectors in visiting all of the schools, tenement houses, department stores, and other places where people are congre-

gated and are, therefore, liable to exposure. Of course, a case of smallpox is apt to crop out now and then, but there is no reason whatever why the disease should spread, if proper measures are taken at the outset."

Insanity in Colorado.—Colorado is facing the situation of insufficient provision for its insane. The Pueblo asylum is overcrowded, and the Denver County Hospital is caring for 119 such patients, in a building designed for about half that number.

The Associated Alumni of the Mount Sinai Hospital.—The following resolutions were adopted by this body: Our honored president and companion, Dr. Edward Fridenberg, has passed from among us in the fulness of life and activity. We recall with pride the fame he had achieved in the practice of his profession, and the esteem in which he was held by his patients. We recall his unusual kindness, his generous courtesy, his sweet companionship, his broad fairmindedness, his remarkable breadth of character, his great love of humanity and above all, his great love for children. His culture and his love of the beautiful dominated his life and thought, his qualities made his life an example which we shall always cherish. A copy of this shall be sent to the family and to each of the New York City medical papers. For the Association: Samuel M. Brickner, M.D.; Edwin Sternberger, M.D.; William H. Luckett, M.D.

Manhattan Dermatological Society.— Regular monthly meeting held on Friday evening, Dec. 4, 1903, at the residence of Dr. J. Sobel, Dr. L. Weiss, presiding.

Dr. W. S. Gottheil presented a case of seborrheic eczema (shown at November meeting) involving hairy parts of the face, chin, upper and lower lips, eyebrows and eyelids. Marked improvement, following the use of sulphur and resorcin ointment, is seen; the eczematous condition is very much paler, the pus follicles diminished and the scaly element reduced.

Dr. C. W. Allen was of the opinion that many of these cases begin as a primary lesion in the nose. He saw just such a condition following chronic rhinitis and ozena; the irritating nasal secretions setting up a dermatitis of the upper lip and from here infection spreads to the hair follicles and also spreads to distant parts of the face, being conveyed by means of the patient's fingers or handkerchief. The involvement of the follicles was secondary and often severe enough to resemble sycosis. In the treatment he advocated swabbing of the nasal cavities with 25 to 50 per cent. aq. sol. ichthyol. For the dermatitis the X-ray. Dr. Crary agreed with Dr. Gottheil in calling it seborrheic eczema with secondary folliculitis. Dr. Abrahams took some exception to Dr. Allen's remarks, inasmuch that the majority of patients with chronic rhinitis never show involvement of adjacent or contiguous skin structures. He looks for another cause in such cases; probably the bacillus of pseudo-erysipelas; this site being a favorite seat for such infection. Although willing to admit some cases might come under Dr. Allen's statement, this case is probably of different origin.

Dr. Weiss suggested epilation of the vestibulæ nasi and application of 2- to 5-per-cent. nitr. silver solution, for the nasal complication; sulphur and resorcin ointment for the eczematous condition. He also spoke favorably of the X-ray.

Dr. B. F. Ochs presented a case for diagnosis. A male of thirty years with a chronic affection of the nails of 8½ years' duration. About nine years ago patient had an eruption on inner aspect of thighs, scrotum and buttocks. Dr. Ochs inclines to the belief that this eruption was an eczema marginatum, and from this patient subsequently infected his nails. All the finger-nails were involved and some of the toe-nails. The nails were cracked, brittle, scooped out (spoon-shaped) and ridged.

Dr. Gottheil considered three conditions: favus—this, he thought, could be excluded; in favus he expected to see greater undermining of the matrix with consequent pressure atrophy and more deformity of the nails. Psoriasis, as an isolated lesion was extremely rare; nevertheless it should be thought of. Ringworm—this he thought most probable to be the case in this patient. The microscope might decide the question, although admitting that microscopical examination of the nails was very unsatisfactory.

Dr. Weiss said the condition was undoubtedly parasitic; the diagnosis of nail affections was a difficult chapter, as no positive information could be deducted from microscopical findings. In making a diagnosis he would be guided in a great measure at least by clinical signs and the history.

Dr. Allen would call to his aid the microscope. Although he suspects this case to be one of tricophytosis, one should not lose sight of the possibility of its being favus; the latter is a much more common nail affection than we suppose. He saw favus of the nails, when no other lesion was present anywhere on the body. The source of infection and mode of contamination in such cases was as obscure as it was interesting. In favus cases he usually finds a small, yellowish spot somewhere beneath the middle of the nail, which microscopically shows almost a pure culture of spores. Drs. Cocks and Crary believe the condition to be parasitic. Dr. Oberndorfer called it tricophytosis; most probable. He expected to see greater scaling and more pronounced lesions if it were psoriasis, chronic eczema might be considered, but the absence of eczematous lesions elsewhere rather excluded such a diagnosis. It was undoubtedly parasitic. Dr. Bleiman stated that the microscopic picture would probably be different when scrapings or nail sections from the fingers and toes were compared, owing to the different existing conditions. The fingers being exposed, cool and dry, while the toe-nails are confined and subject to heat and moisture. The differential diagnosis between favus and tricophytosis, even with the aid of the microscope, was no easy task. Dr. Allen said he recognized the favus spore by its larger size and more oval shape. Dr. Abrahams remarked that he saw a condition which resembled present case in a housewife, whose hands were exposed to water and soda. The condition being one of traumatic chronic eczema due to excessive moisture, constant irritation and maceration.

In the patient exhibited no such etiological factor existed, and hence he looks for a parasitic origin.

Dr. Crary showed a photograph of an infant ten days old with favus lesions on scalp and elbow, contracted from its mother, whose lesion was on the scalp.

PHILADELPHIA.

Phipps Institute Lecture.—The third lecture in the series under the auspices of the Phipps Institute will be given December 29 in Witherspoon Hall by Dr. G. Sims Woodhead, of England, Professor of Pathology in Cambridge University and a member of the Royal Commission on Tuberculosis. The subject of the lecture is to be "Paths of Infection in Tuberculosis."

Compulsory Vaccination at University.—The Provost of the University of Pennsylvania has officially written to the dean of each department making

compulsory the vaccination of every member of the teaching body, every member of the student body and every employe who has not been successfully vaccinated within the last five years.

The Statue of "The Medicine Man."—The statue of "The Medicine Man" was during the past week formally presented by the Fairmount Park Art Association to the city of Philadelphia. The statue, which represents a young Indian, equipped in proper insignia, mounted upon a saddleless horse, has been placed at the head of Strawberry Hill, in East Park.

Plans for Medical Inspectors Partly Approved.—Upon the recommendation of Finance Committee, which reversed its first action, Common Council has approved an appropriation of $60,000 to the Bureau of Health to carry out, partially at least, the plans of Director Martin for reorganizing the system of medical inspection. It is believed that Select Council will concur. The request for 25 nurses was not allowed.

Intussusception During Typhoid Fever.—An interesting case of this lesion was reported at the meeting of the Philadelphia Academy of Surgery December 7 by Dr. G. G. Ross. The patient was a boy who, about the twenty-fifth day of an attack of typhoid fever and after having several hemorrhages, developed symptoms of perforation. He was operated upon a few hours after the onset of symptoms but on opening the abdomen no evidence of peritonitis was visible. Examination of the lower portion of the ileum revealed no perforation. Further search resulted in the discovery of an intussusception three inches in length at a point three feet below the junction of the duodenum and jejunum. The invaginated gut was easily reduced. The patient is now well on the road to recovery, although he had several hemorrhages after the operation.

Pancreatic Calculus.—Dr. G. P. Müller reported this case at the Pathological Society December 10. The lesion was found post mortem in a man of sixty years, who was admitted to the German Hospital while critically ill and died three days later. No history of his past or present illness could be obtained. The cause of death was apparently pulmonary tuberculosis. All the biliary ducts were found to be patulous, but the duct of Wirsung was occluded by a large number of closely packed calculi, some of which were nearly a centimeter in length. They gave the reaction of calcium carbonate. The parenchyma of the pancreas was almost entirely replaced by fat, the islands of Langerhans being uninvolved.

Trypanosoma Lewisi.—Drs. W. M. L. Coplin and A. G. Ellis exhibited specimens, in stained preparations and in fresh blood, of *Trypanosoma Lewisi*. The parasites were at first secured through the kindness of Dr. Novy, of Ann Arbor, but later specimens for inoculating purposes have been secured from wild gray rats caught within the enclosure of the Philadelphia Hospital. Of 23 specimens from that institution 10 contained the parasites in large numbers. Broadly speaking, the young rats were found to be infected and the old ones uninfected. Rats from other sections of the city have not been examined. Of 16 wild rats from Asheville, N. C., five were found to contain the parasites. Studies are being made of the tissues of infected rats with as yet no positive results, except in one instance, which may be of considerable significance. In the lung of an infected rat which had died was found quite large areas of distended vessels and hemorrhage which practically amounted to infarction. This fact is of interest in connection with the recently reported case of atypical pneumonia in a person who was suffering from trypanosomic infection. Although the parasites could not be demonstrated in the vessels, the occurrence of these hemorrhagic areas suggests the possibility of pulmonary infarction in cases of infection by the parasite.

Hydrophobia Still Unknown to the Coroner.—At the recent meeting of the Philadelphia County Medical Society, Dr. G. M. Illman reported a case of hydrophobia with autopsy. Dr. Illman deplored the fact that the disease has no official recognition in the city and is not even generally recognized by the medical profession. When he returned the case in question, the coroner's office refused to accept his certificate of death from hydrophobia and insisted on classifying it as due to extreme hysterical convulsions following the bite of a dog. The patient had refused to undergo the Pasteur treatment until the symptoms of the disease had made their appearance. Dr. Illman argued in favor of muzzling dogs and also of quarantining them at all seasons of the year when they show signs of illness. In the discussion Dr. M. P. Ravenel said that in addition to his experience with human beings he had demonstrated beyond a doubt in more than 150 animals that hydrophobia is a distinct disease.

American Roentgen Ray Society.—The fourth annual meeting of this Society was held in Houston Hall, University of Pennsylvania, on December 9 and 10. A very instructive exhibit of apparatus was made and papers were read by many of the best known X-ray workers of the country. Variable results were reported, some having met with disappointment in the therapeutic effect of the agent in question, others reporting very satisfactory series of cases. Among the Philadelphians who read papers were Drs. W. M. Sweet, C. L. Leonard, G. E. Pfahler, W. H. Newcomet, M. K. Kassabian, and H. K. Pancoast. The address of President Goodspeed was upon "The Trend of Modern Thought Upon the Subatomic Structure of Matter." The meeting of 1904 will be held in St. Louis. The officers elected were: President, Dr. James B. Bullitt, of Louisville; secretary, Rr. Russell H. Boggs, of Pittsburg; treasurer, Dr. Weston A. Price, Cleveland; first vice-president, Dr. John B. Murphy, Chicago; second vice-president, Dr. Charles L. Leonard, Philadelphia; third vice-president, Dr. Edwin E. King, Toronto; executive committee, Dr. Preston M. Hickey, Detroit; Dr. Kennon Dunham, Cincinnati.

CHICAGO.

Suicide Increase is Great.—An alarming increase in the number of cases of homicide during the last year is shown in the annual report of Coroner Träger. More than 50 per cent. of the fatalities the Coroner charges to the practice of carrying concealed weapons. Interesting data concerning the gloomy work of the office is also shown by the report. During the year 459 suicides were reported and investigated. Of these, 239 were of married people, from which the Coroner argues that more unhappy persons are to be found in the dual state than in single life. Of 225 suicides who died by poison, 169 ended their lives by taking carbolic acid. The Coroner's office investigated 6,053 cases during the year, arranging for 3,194 inquests. Next to self-destruction, railroad accidents claimed the greatest number of victims—359—nearly half of these being slain at crossings. While more cases were investigated during July than any other month, the greatest number of suicides occurred during September, reaching as high as 46. March is also a bad month for suicides, having a record of 44. The

greatest number of deaths reported to the Coroner occurred between the ages of 30 and 40.

Health Matters.—Although the November (1903) mortality was below the average of the previous ten years, 13.71 and 13.80 per one thousand respectively, the month has not fulfilled the hope that it would continue the decreased rate of the previous five months, and so offset the high rate of the earlier months of the year. The probabilities now are that the total deaths for the year will be in the neighborhood of 28,400 and that the death-rate, computed on the Chicago Health Department's conservative estimate of 1,885,000 population, will be about 15 in the thousand. This will be higher than that of any year since 1899, when the rate was 15.56 per thousand. The week's mortality was unusually low for the season of the year; compared with that of a year ago it shows a 12.5 per cent. decrease in proportion to the population. The causes of death showing the most marked decrease are Bright's disease, consumption, pneumonia, scarlet fever, and typhoid fever. The acute infectious diseases all show a reduction in the number of deaths and in the number of cases reported.

Sympathetic Ophthalmia.—Dr. Oscar Dodd reported this case at a recent meeting of the Chicago Medical Society. He emphasized the necessity of care in watching any case of injury that sympathetic inflammation may not develop, and the danger of passing over any trouble in the other eye, however slight, as being a simple matter. He laid stress particularly on the hopelessness of treatment in these cases, as no severe case had ever been cured.

Pregnancy Following an Operation in which the Right Ovary was Removed, Left Ovary Resected, and the Round Ligaments Shortened Intra-abdominally.—Dr. Anna M. Braunwarth read a paper on this subject before the Chicago Medical Society, Dec. 9. The points of interest in this case may be summarized as follows: A case of cystic degeneration of the ovary, and retroversion of the uterus, one ovary having been removed and the other resected, and the round ligaments shortened intra-abdominally. Within four months after her recovery from the operation, the woman became pregnant and was delivered of a full term child, with normal labor. The vomiting of pregnancy ceased as soon as the pessary was removed. During her puerperium the temperature rose to 104° F., due to retained secretions in the uterine cavity, and subsided after curetting. The shortening of the round ligaments intra-abdominally interfered in no way with carrying the child to term, or with delivery. The case teaches that resection of ovaries is not opposed to pregnancy; that cystic degeneration does not necessarily prevent normal ovulation and conception, and that a pessary retained as a uterine support may prove to be an irritant, which will cause severe vomiting in pregnancy.

Permeability of Rubber Drainage Tubing to X-ray.—Dr. Joseph F. Smith read a paper on this subject before the Chicago Medical Society. The following investigation was carried out at the suggestion of the late Professor Christian Fenger, and is based upon a case which occurred in his service at the Presbyterian Hospital in the latter part of the year 1900. Miss C., aged twenty-nine years, was admitted to the hospital suffering from an extensive tuberculous abscess in the region of the right iliac synchondrosis, which had previously been opened and drained without improvement. The patient was anesthetized and through an extensive incision part of the right ilium was resected, and an extensive tuberculous abscess found in the right iliac fossa. From the abscess two sinuses were discovered, one leading upward along the psoas muscle toward the upper lumbar vertebræ and the other leading downward into the cavity of the pelvis. These sinuses were isolated and explored as far as possible, and drained by means of No. 8 Nelaton catheters, one being placed in the upper sinus to a depth of eight or ten inches, and the other to an equal depth in the lower sinus. Both were brought out through the external incision at the same point, and secured by fastening with safety pins, and a large absorbent and protective dressing applied. A few days later, when dressing the patient, it was discovered that one of the catheter drains had disappeared from the wound, the other being still in place. Careful search failed to reveal the presence of the drain in the dressings, and the special nurse in charge of the patient, upon being carefully questioned, declared positively that the tube had not fallen out during any of the dressings. The conclusion that the tube must have slipped into the wound and been lost in the abdominal cavity or in the cavity of the pelvis seemed most probable. After going over the facts carefully, Professor Fenger decided to reopen the wound and make careful search for the missing drain, and accordingly ordered the patient prepared for operation. On the day set for the operation it was decided to take an X-ray picture through the region in which the rubber drain had been placed, to see if any shadow of the missing tubing could be obtained; although at that time it was not thought probable the rubber tubing would cast a shadow of sufficient density to enable it to be seen through the thickness of the body. However, a skiagraph was taken and contrary to expectations a very distinct and definite shadow of the upper tube was obtained. Since the drains were both exactly the same size and kind of material, both being No. 8 Nelaton catheters, it seemed a certainty that the second tube should also show if still present within the body. Skiagraphs were made of the entire abdomen, from the pelvis to the diaphragm, but no shadow of the second drainage tube was obtained. It was decided, therefore, that the tube must have slipped out and been lost in the dressings, notwithstanding the positive assertion of those in charge of the dressing of the patient to the contrary. The exploratory operation to search for the missing tube was abandoned, and the patient went on to an uneventful recovery. The fact that the tube used for drainage in this particular instance produced such a distinct shadow with the X-ray made it desirable to ascertain whether or not all of the kinds of rubber drainage tubing in common use produced shadows that enabled them to be distinguished through a considerable thickness of tissue, and if not all, what particular kind of drainage tubing produced the most distinct shadow. For this purpose samples of pure gum, plain white, corrugated white, and maroon tubing of the same size and thickness were obtained. These with a No. 12 Nelaton catheter were arranged side by side upon a cardboard, and a skiagraph taken through the thigh of a boy eight years of age. In the skiagraph the red catheter rubber gives a very dense shadow; the plain white, corrugated white tubing, cast a distinct shadow, the maroon a somewhat less distinct shadow, while the pure gum tubing produces scarcely any shadow at all. Since various metallic compounds enter into the composition of rubber tubing, it becomes a matter of interest to compare equally thick layers of metallic compounds and their solutions. For this purpose paper boxes having a depth of one centimeter were dipped in melted paraffin to render

them impermeable to solutions, and filled with finely pulverized salts of various metals, and also ⅛ gram molecule solutions of the same salts. These salts and solutions, prepared by Professor Walter S. Haines and Dr. Frick, were arranged in order upon a plate and exposed to the X-ray. The negative shows that different metallic salts differ widely in their permeability to the X-ray, and that this same difference extends also to their equivalent solutions. It appears also that the permeability depends upon the nature of the positive radical and varies inversely as the atomic weight of the metal forming the positive radical. This matter, however, requires further investigation with a large number of salts and careful tabulation of results before perfectly definite statements can be made. Although some work has been done along this line by Trowbridge and others, further investigation is necessary to clear up the matter definitely. A comparison of the densities of the shadows cast by the salts and solutions shown in the skiagraph explains the variation in density of the various kinds of rubber drainage tubing. The bright red catheter and stomach tubing contained vermilion (mercuric sulphide), HgS, and it will be seen from the skiagraph that the compounds of mercury cast very dense shadows. The maroon tubing contains vermilion (HgS), or sulphide of antimony (Sb_2S_3), generally the latter. The white tubing contains salts of lead or zinc, chiefly lead oxide (litharge, PbO), and these metals cause the tubing to cast quite distinct shadows, though not so heavy as the maroon and red tubing. The pure gum containing no metallic compounds, or only traces of them, cast a very faint shadow when shown through any considerable thickness of tissue. The practical conclusion to be drawn from the facts above stated pertains to surgical work chiefly. In the drainage of cavities or long sinuses, there will be a distinct advantage in the use of rubber drainage tubing that produces a distinct shadow with the X-ray, especially in cases where there is any danger of the drain slipping into and being lost in the cavity or sinuses. For diagnostic purposes also there is a certain practical bearing, because red rubber catheters, stomach tubes, etc., passed into passages of the body, as the esophagus, for example, show in the skiagraph the extent to which the passage is patulous.

GENERAL.

Dr. Finsen is Ill.—A report from Copenhagen, Denmark, dated Dec. 11, states that Dr. Finsen of that city, to whom the Nobel Medical Prize was awarded by the Norwegian Parliament on Dec. 10, is dangerously ill.

Yellow Fever in State of Mexico.—The Texas Health Department is advised that no new cases of yellow fever have appeared at Monterey, Tampico, and other places in Northern Mexico for several days. The Texas quarantine against those places will be raised in a few more days. Dr. Eduardo Liceaga, President of the Superior Board of Health of Mexico, has requested the Mexican Congress to make an appropriation of $100,000 to be used in combating yellow fever on the Gulf coast of Mexico next season. Dr. Carillo, Vice-President of the Board of Health of Monterey, announces that there were about 10,000 cases of yellow fever in that city during the recent epidemic, and that there were 580 deaths from the disease.

The Nobel Prizes.—Although the award of the five Nobel prizes for 1903 does not conform closely to the forecast cabled to this country in October its propriety will be quickly perceived by those best qualified to have an opinion in the matter. More than one perplexing situation has been met with striking sagacity, justice and good taste. Without question the most important work done in physics in the last few years has been in the study of radiation. Two years ago Roentgen received the Nobel prize for his investigations in that field, and last year Lorentz and Zeeman, two Dutchmen, divided the honor. The judges who made the choice this time naturally thought of M. and Mme. Curie. They were aware, too, that in all probability neither polonium nor radium would have been discovered so soon but for Becquerel's observations of the strange properties of uranium eight or nine years ago. Not only is radium obtained from the same ore, pitchblende, but the first characteristic of it which attracted attention was its ability to emit an invisible radiance like that of uranium and the vacuum tube. It was, therefore, decided to put Becquerel on a par with his compatriots. On previous occasions a prize has been divided between two persons, and now three share one. While the pecuniary effect of that arrangement is not so satisfactory as it might be, the honor is the chief desideratum, and that is in no way diminished by division. It is noteworthy, too, that, though Becquerel and the Curies are chemists, their recent researches are looked upon primarily as contributions to physics. Arrhenius, the Swede, who wins the prize in chemistry this year, has well earned it. His text-book in electrochemistry is not only one of the most recent but also one of the most authoritative works on that subject. Moreover, he is the author of the theory of ions, which has been advanced to explain the dissociation of substances by electricity. This was first propounded in 1888, but was so revolutionary in its suggestions that time was needed for its full acceptance. Even yet it does not command unanimous support. Still, in formulating the doctrine, Arrhenius is believed to have rendered valuable service to chemistry. Finsen, of Copenhagen, has been so favorably known through his experiments in healing with electric light that it was generally expected a year ago that he would be honored as he is now. No one needs to be told who Björnsen is, or why he receives the literary prize. The public will certainly approve that award, and many people will feel peculiar joy on discovering that he has not been compelled to share it with Ibsen, as at one time seemed possible. Finally, there will be no doubt about the fitness of according to Mr. Cremer, for thirty years the secretary of the International Arbitration League, the prize for devotion to the cause of universal peace. One of the most interesting phases of the distributions which have been made by Nobel's trustees during the last three years is the nationality of the recipients. Owing to the division of several prizes, nineteen persons in all have been recognized. It will be noticed that the Scandinavian race, of which Nobel himself was a representative, was ignored until this year, and now Sweden, Norway and Denmark are simultaneously complimented. Certainly, there is no chance here for an imputation of partiality. Four Germans, five Frenchmen, three Dutchmen and two Englishmen—Mr. Cremer is the second—are included in the list. The latter is completed by the addition of one Russian and a single Switzer. As yet America and Italy remain unrecognized, but their turn may come next year.—N. Y. *Tribune.*

The Journal of Comparative Neurology and Psychology.—The *Journal of Comparative Neurology,* as originally announced, was open to contributions in the fields of comparative neurology, physiology and psychology. The founder, feeling that the time was ripe for a more thorough correlation of the facts in these different fields, planned to devote the journal as much to the functional as to the structural study of the

nervous system. During the thirteen years of the existence of the *Journal of Comparative Neurology*, the functional side of neurological work, although not wholly neglected, has received far less attention than was originally contemplated, chiefly on account of the continued ill-health of the editor-in-chief, who had intended to devote himself primarily to comparative psychology. Now, however, the editors announce an enlargement of the editorial staff which will insure a more satisfactory representation of the functional as well as the structural aspects of neurology. The journal will hereafter be known as the *Journal of Comparative Neurology and Psychology*. The organization of the editorial staff remains in general as before save that Dr. Robert M. Yerkes of the Department of Psychology, Harvard University, will be the responsible editor for the department of Animal Behavior. He will be supported on the editorial board by representative students of Comparative Psychology and other departments will be strengthened by the addition of collaborators. The attention of psychologists, physiologists and medical practitioners is called to the fact that this is the only journal in any language especially devoted to this large and important field of research. It is aimed to make the journal indispensable to all who are interested in the structure and functions of the nervous system from whatever point of view. They will find much of value in the materials published, for in addition to the recognized fact that the human nervous system can be best understood structurally by a study of its phylogeny, it is now clear that an understanding of the reactions of lower organisms and especially of the evolution of action, is necessary for an appreciation of the functional significance of the human nervous system. For morphologists the journal will continue to be, as in the past, the *vade mecum* in its department. Hereafter the journal will appear bi-monthly, and each annual volume will contain about five hundred pages. The first number of the new volume is to be ready in February. Every effort will be made to secure as prompt publication of acceptable contributions as is consistent with the high standard of scientific and mechanical excellence which has been maintained. Contributions will be accepted in English, German, French or Italian. The subscription price will be $4.00, strictly net (foreign subscriptions $4.30, 18s., M.18, 22fr., L.22). All present subscribers to the *Journal of Comparative Neurology* will receive the volume for 1904 at $3.50. Complete sets of back numbers may still be had at the original price of $3.50 per volume. Numbers are sold separately at prices varying with the contents.

Obituary.—Dr. Elisha Hall Bridges, a prominent physician and medical expert, is dead at Ogdensburg of acute Bright's disease. For years he had been head of the Medical Association in that city. He was sixty-two years old, and is survived by his wife, a daughter, and a son, Attorney Henry W. Bridges, of New York.

Dr. Cornelius N. O'Leary, of 560 West One Hundred and Thirty-third Street, who was killed by a motor train at New Utrecht Avenue and Fifty-seventh Street, Brooklyn, on Saturday night, was buried from his late residence on Tuesday last. Dr. O'Leary was born in Ireland sixty-four years ago, and came to this country with his father when a boy. After graduating from the College of Montreal, he attended the University of the City of New York, and graduated from the Medical Department in 1862. Upon the death of his father in 1864 he succeeded him as professor of philosophy and classics at Manhattan College, which chair his father had occupied since the organization of the college. In 1870 he was connected with the Board of Health in the capacity of inspector, and resigned that position to become a Commissioner of Pharmacy in 1871. He wrote for various periodicals, evolution being one of his favorite subjects. He was a great admirer of Herbert Spencer, and one of his articles, entitled "Evolution in the Light of Recent Research" is well-known in scientific literature.

SOCIETY PROCEEDINGS.

NEW YORK PATHOLOGICAL SOCIETY.

Stated Meeting, held October 14, 1903.

The President, William H. Park, M.D., in the Chair.

Pathological Anatomy of the Shiga Bacillus in Infections of the Intestines in Infants.—Dr. John Howland presented a paper on this subject. The organism found in all the cases examined was the type known as the acid-producing or Flexner-Manila organism; that is, it fermented glucose and saccharose, but not lactose, and split mannite with acid formation. It produced an early acidity in milk with a subsequent alkalinity, and agglutinated with the "Harris" serum in high dilutions. Thirty-two cases were examined. From a study of these cases it seemed that they could be grouped with considerable accuracy according to the histological findings. Group A, comprising five cases, represented the severe infections where the pathological changes were of a pseudomembranous type. The membrane may be of irregular distribution or very extensive, involving both the colon and the ileum. The pseudomembrane was composed chiefly of necrotic tissue, desquamated cells and countless bacteria. Fibrin was present in very small amounts or not at all. There was a necrosis of the mucosa and it was this necrosis which chiefly gave the appearance of a false membrane; but in all these cases the necrosis did not extend beyond this coat. In the necrotic tissue and at its border there were hemorrhages, and thromboses, and it was divided from the healthy tissue by a zone of small cell infiltration, containing both mono- and polynuclear cells. The submucosa in four of the severe cases was much swollen and infiltrated. The cellular infiltration was composed of cells resembling Unna's plasma cells and was most marked about the blood vessels. The muscular coat showed only a slight mononuclear cell infiltration. The peritoneal coat was normal. Group B included four cases in which the mucous membrane in both the small and large intestines were in a good state of preservation. The changes occurred chiefly in the lymphoid follicles. The submucosa was normal as were the muscular and peritoneal coats. Group C includes those cases characterized by superficial necrosis and ulceration in the mucous membrane not limited to the follicles as in Group B, and not accompanied by the formation of a pseudomembrane as in Group A. In this group there were five examples. The changes consisted of congestion and hemorrhage into the mucosa with necrosis of isolated portions of the mucous membrane, which necrotic portions might be exfoliated so as to form ulcerations on the surface. The necrotic areas and ulcerations were usually surrounded by a zone of inflammatory reaction. The submucosa occasionally showed cellular infiltration. The other coats were not affected. Group D contained 14 cases which showed microscopically but few discoverable lesions, beyond congestion and moderate hyperplasia of the lymphoid tissue and, in one case, of slight cellular infiltration of the submucosa. There was very little histological change. As far as the other organs were concerned there were no characteristic findings. The mesenteric nodes were usually somewhat enlarged, rarely markedly so. The lungs showed hypostatic congestion and small areas of bronchial pneumonia. The

liver was fatty in about the same percentage as in other infantile conditions. The spleen was as a rule unaffected unless some other infection was added. The kidneys showed cloudy swelling. Cultures from the organs did not show the Shiga bacillus. It is evident that the Shiga bacillus may produce a great variety of lesions and that with these lesions may be associated all grades and types of diarrheal disease as distinguished by clinical symptoms and pathological findings.

Bacterial Flora in Infantile Diarrhea, with Especial Reference to the Dysentery Bacillus.—Dr. Charles W. Duval read a short abstract on this work, which he and Mr. E. H. Schorer had done during the summer, in the laboratory of the College of Physicians and Surgeons. Seventy-nine cases of so-called "summer complaint" were examined, under which clinical title were included all types of the disease from mild diarrhea to severe ileocolitis. The stools were examined within ten to fifteen minutes after they were passed and to this fact was due a large amount of the success obtained in isolating the *Bacillus dysenteriæ*. The bacillus was present in greater or less numbers in every variety of intestinal disturbance, and also in normal stools from infants. Of the cases of summer diarrhea, 75, or 94 per cent., showed the dysentery bacillus. The character of the stools was no certain indication of the presence of the *Bacillus dysenteriæ*, though the organisms were most likely to be isolated from cases showing bloody mucus. Plates from the stools showed a few scattered colonies or almost pure cultures. Five of the cases examined showed bacilli of the types "Harris" and "Shiga;" or, in other words, those which ferment or do not ferment on mannite. In this same group of stools, the Bacillus "Y" of Hiss and Russell was also isolated. Five cases contained the two types. In three the fermenting type predominated in the proportion of eight to three; in two the non-fermenting was present in greater numbers. In 11 cases the bacillus was of the non-fermenting type, or true "Shiga." In 58 cases only the fermenting or "Harris" type could be found. In the identification of the colonies after they had been fished from the plates, the semi-solid medium of Hiss was found to be superior to glucose-agar, as it excluded motile organisms and showed gas production in a few hours. In plating the stools it was found wise to select those parts which contained mucus and to shake them up in physiological salt solution or bouillon; then to set them aside for a few minutes to allow the coarser particles to subside, and to use one or two loops of the suspension for each plate, being careful not to disturb the settled particles. This method gave, as a rule, 50 to 100 colonies per plate. Plates were incubated for from fourteen to eighteen hours and then every small pearl-gray colony was subcultured to the Hiss medium. The colonies resembling *Bacillus dysenteriæ* were marked with a wax pencil and the plates were kept at a low temperature for a week, daily observations being made for fresh colonies. If the bacillus was not obtained in the first or second fishing all marks were erased and every small colon-like colony was transferred to the semisolid medium. All tubes showing a cloud were disregarded. Those showing a growth only along the track of the needle were stirred with a platinum wire in order to bring out the bubbles of gas which had been formed. The cultures showing no gas production were tested for the agglutination reaction by suspending a few loops of the growth in the semisolid medium in physiological salt solution and adding a known serum of high agglutinating power. The identification of the bacillus by the agglutination reaction was not, however, wholly reliable as there are bacilli which react in high dilutions but which culturally do not correspond to the dysentery bacillus. The speaker laid great stress on the reaction in litmus milk observed over a period of weeks for the final identification of the organisms.

Results of the Bacteriological Examination of the Stools from Cases of Summer Diarrhea, with the Especial Object of Finding the Bacillus dysenteriæ.—Dr. Herman Schwartz read a paper on this subject. He took only those cases of typical summer complaint which were characterized by profuse watery stools with little or no mucus. He first examined the blood of 25 healthy infants for agglutination reactions with *Bacillus dysenteriæ* in dilutions of 1 to 10, 1 to 20 and 1 to 50. These, with one exception, 1 to 10, were all negative. The normal stools of three healthy, breast-fed and three healthy bottle-fed babies were then examined with negative results. The stools from 30 cases of the character as stated above were also studied.

Technic.—The stools were taken by means of double tubes; the anal region being disinfected, the larger caliber tube was inserted about one-half inch in the rectum; the second tube of smaller caliber and longer than the first, was inserted through this larger tube, well into the rectum and the mucous membrane of the latter irritated. This seemed to be the only feasible method of obtaining these watery stools. When macroscopical mucus was present the fluid stool was put into a Petri dish and the mucus fished out and put into bouillon. Otherwise, a few c.c. of this fluid was put into bouillon and then in 13 cases agar plates in the ordinary way made. In the remaining 17, the method used by Dr. Duval was used. In all the 30 cases the results were negative. The blood of these cases was also examined for agglutination reactions (1 to 10—1 to 20—and 1 to 50), with negative results.

Conclusions.—(1) The blood of healthy infants and children rarely contain agglutinins for the dysentery bacillus; (2) the normal stools of infants in the cases examined did not show the presence of these bacilli; (3) that in the cases of typical summer diarrhea with green, watery stools, these bacilli were not present, or if present, must be in exceedingly small numbers; (4) the serum from these cases of summer diarrhea showed no agglutinins for the dysentery bacillus; (5) from the results of these observations, it would seem that these bacilli are not usually a factor in this class of summer diarrhea.

Diarrhea in Infants.—Dr. Martha Wollstein read a paper in which she described the results of the study, during the three summer months, of 62 cases of diarrhea in infants from two months to two years old, the stools of which had been examined for the Shiga bacillus in the laboratory of the Babies' Hospital. Dr. Grace Dewey had assisted in the work. The material had been obtained from the wards of the Babies' Hospital and of the Foundling Asylum. Of the 62 cases, 47, or 78 per cent., were positive. At the Babies' Hospital the mortality rate was 55 per cent. of the positive cases and at the Foundling Hospital 78 per cent. From stools containing much mucus, with or without blood, the Shiga bacillus was isolated quite readily in most cases. Stools with little mucus and no blood often necessitated fishing of very large numbers of colonies on successive days before any *Bacillus dysenteriæ* could be found. In every instance it was the acid of mannite-fermenting variety of *Bacillus dysenteriæ* which was encountered in this series.

Gastro-intestinal Disturbance in Infants and Children.—Dr. Louise Cordes reported the results of an examination of the stools of 51 patients of gastro-intestinal disturbances in infants and children conducted in

the laboratory of the New York Infirmary for Women and Children, in order to determine the presence or absence of the *Bacillus dysenteriæ*. The material was obtained from unselected cases; even those showing the mildest symptoms were examined. It was, in a good many cases, obtained fresh and plated at once. The *Bacillus dysenteriæ* was found in the stools of 26 cases, two of which were five and ten years old, respectively. In 25 of the stools the acid mannite type of the *Bacillus dysenteriæ* was found. In one the alkaline mannite type. Agglutination as high as 1 to 3,000 and 1 to 3,500 was obtained with the bacillus of the acid type from six cases. The same organisms showed an agglutination with the Shiga anti-dysenteric serum in from 1 to 200 to 1 to 500. The bacillus of the alkaline mannite type gave a positive reaction with the Shiga anti-dysenteric serum in a dilution of 1 to 7,500. With the Harris anti-dysenteric serum a fair agglutination was obtained at 1 to 2,000. The blood of 45 of the patients was tested with the Harris and Shiga dysentery bacillus in dilutions of 1 to 40 or 1 to 50. In ten a positive reaction was obtained.

Etiology of Dysentery and Summer Diarrhea.—Dr. William H. Park reported the results of investigations carried out by himself and Dr. Katharine R. Collins and Dr. Mary E. Goodwin upon the etiology of dysentery and summer diarrhea at the Research Laboratory, the work having been carried on so much in common that a single joint report was made, as follows: In general the results agreed with those reported by Drs. Wollstein and Cordes and differ somewhat from those of Dr. Duval. They had not found the Shiga type of bacilli at all in the ordinary summer diarrheas. Especial attention was paid to the agglutination of the two groups of dysentery bacilli. The agglutination test for the identification of the dysentery bacilli is one to be carried out only with the greatest care. The test properly performed is delicate and reliable, but when carried out with insufficient precautions is misleading. It has been known for some time that the blood of animals before immunization, possessed in moderate amount substances which agglutinate many bacteria. An agglutination of bacteria must, therefore, take place in high dilution of serum before it can be considered a specific reaction. From results obtained in the Research Laboratory Dr. Park considered that even this requirement was insufficient for testing dysentery bacilli. It was found before any inoculations had been made, that the blood serum of certain horses agglutinated, even in such high dilutions as 1 to 1,000, both the bacilli having the characteristics of the true dysentery bacillus of Shiga, and those having the characteristics of the mannite-fermenting class of Kruse, Flexner and Duval. This applied to a less extent to the serum of grown goats and even in a very slight degree to the serum of rabbits. It has happened in some instances that after repeated injections with cultures of one of the varieties of the dysentery bacilli, that the animal's blood agglutinated the variety of bacilli not used in immunization in as high or even higher dilutions than it did the variety injected. It was also found that a serum drawn from a horse which had been immunized by repeated injections of the dysentery bacillus received from Shiga, agglutinated this bacillus in dilutions of 1 to 500. The same serum, however, agglutinated the mannite-fermenting bacillus in dilutions of 1 to 1,000. The serum from another horse which had received injections of the mannite-fermenting bacillus, agglutinated this bacillus in dilutions of 1 to 1,000; but also agglutinated the Shiga bacillus in dilutions of 1 to 500. These two different varieties of bacilli would be judged by these reactions to be much alike in their affinities. Indeed, Shiga and Flexner seem to have made this mistake. Duval and Bassett certainly fell into this error, when they announced in the fall of 1902, that the mannite-fermenting type from the Baltimore diarrhea cases and the Shiga type had identical agglutination characteristics. These varieties are now known to differ completely in this respect. Young animals before immunization were found to be wholly or comparatively free from bacterial agglutinins, and in them we were able to produce an almost pure development of specific agglutinins. A goat six weeks old was found to possess before treatment no appreciable bacterial-agglutinating substances in its blood. After four injections of a culture of Shiga dysentery bacilli, its blood in dilutions of 1 to 500 agglutinated Shiga bacilli, but only in dilutions of 1 to 10 the mannite-fermenting variety. A rabbit, whose blood was negative before immunization, after six injections of this bacillus agglutinated the mannite-fermenting bacillus in dilutions up to 1 to 5,000. The Shiga bacillus was agglutinated only in dilutions of 1 to 20. The slight development of substances which agglutinated the mannite fermenting type during the process of immunization to the Shiga bacillus cannot be considered as showing any affinity between the Shiga type and the fermenting type, as about the same increase was found in animals injected with nutrient bouillon and other substances. It seems that the general employment of immunized horse's serum for differentiating varieties of dysentery and colon bacilli is a mistake. The true dysentery bacilli of Shiga were found in ten cases of characteristic dysentery ocurring in different parts of Mount Vernon and Tuckahoe. These towns are situated just north of New York City. The bacilli were also found in a serious case occurring in the Coney Island district of Brooklyn. The mannite-fermenting bacilli were found in about one-half the cases in the Mount Vernon epidemic, in five cases among workmen on Riker's Island, in two cases at Orange, in one case at Coney Island, and in three cases in New York City. All the above cases exhibited characteristic symptoms of dysentery and differed in no way from cases where the true Shiga bacilli were obtained. In no characteristic case of acute dysentery where suitable material for examination was obtained did they fail to find either the Shiga or the mannite-fermenting type of dysentery bacilli. Besides the characteristic cases of dysentery in which, as a rule, some history of infection was obtained, a large number of cases of summer diarrhea were met with in which excessive mucus, with or without traces of blood, occurred in the stools. In the majority of these cases the mannite-fermenting type of dysentery bacilli were found, although at times in very small numbers. In none of these were the Shiga bacilli discovered. In cases of cholera infantum, no dysentery bacilli of either type were met with. They were also not obtained from the stools of cases of subacute diarrhea in institutions where no cases of the dysentery type existed. The blood from cholera infantum and simple diarrhea cases did not clump any of the dysentery bacilli in the author's collection in dilutions higher than 1 to 10. The Shiga type of bacilli obtained from three different localities were found to agree closely in cultural characteristics, in their agglutination, and in their sensitiveness to a specific bactericidal serum with the cultures of the same type obtained from Shiga (Japan), Duval (New Haven), and Wollstein (New York City). The mannite-fermenting bacilli from the characteristic cases of dysentery and from the cases of summer diarrhea agree in most respects with each other and with the cultures obtained by Flexner in Manila and by Duval in Baltimore. They differ quantitatively and possibly also qualitatively in their reactions to the specific agglutinins ad bactericidal substaces produced in animals after injection of different cultures. From the Shiga bacilli

they differed wholly in their reaction to specific agglutinins and bactericidal substances. The writers believe that it would simplify matters to designate the bacilli identified by Shiga as dysentery bacilli, and the mannite-fermenting, indol-producing bacilli as paradysentery bacilli. The Shiga variety is found rarely, except in the characteristic cases of dysentery or in milder cases associated with them, while the mannite-indol type is found in a moderate number of characteristic cases, but most often in the irregular mucous diarrheas of summer. The relationship between these two groups of bacilli is very similar to that between the typhoid bacillus and the paratyphoid bacillus.

Dr. Park, in the discussion, asked Dr. Duval if he did not think that a serum, such as the immunized horse serum, which frequently agglutinated both types of dysentery bacilli in high dilutions, as well as other bacteria, was dangerous to use for purposes of accurate identification.

Dr. Duval replied that Dr. Park evidently misunderstood his paper; that he identified the organisms culturally and then tested every culture with the sera Shiga and Harris. All his isolations were agglutinated by dysentery serum. The serum he used was that prepared at Philadelphia by Dr. Gay. The horse serum used, agglutinated in dilutions of 1 to 1,000 or more. The main point was to determine first the cultural features, then try the agglutination reaction. If Widal is made first, obtaining positive reaction with the horse serum in 1 to 50, 1 to 200 or 1 to 500, the bacilli cannot be identified as dysentery unless followed out over a period of several days, with special reference to litmus milk, to identify them by their cultural features.

Dr. Libman said that the work reported indicated that the bacilli were found mainly in the cases with mucus or mucus and blood, and that it seemed that every loose stool with mucus was accompanied by the organisms in question. Such a condition of affairs—that is, a constant etiological factor for a pathological secretion—was unknown elsewhere in the body. So that the question arose whether the mucus was not a favorable medium for the growth of organisms which might be present normally, in at least some of the cases. He was aware that the organisms had not been found in normal stools; but a crucial test had not been made. The contents of different parts of the bowel should have been examined in children that had died of non-diarrheal diseases. While he did not wish to doubt the relationship of the organisms in question to diarrheal diseases, a doubt would remain until such studies as he suggested were made. It was possible that organisms which existed normally in the upper part of the bowel might be found in the stools in diseased conditions. Tissier had shown that a dose of calomel was enough to produce a stool full of streptococci in cases where none or very few had been present before. He said he had, several years ago, found in two cases of cholecystitis, bacilli corresponding culturally to the dysentery bacilli. Dr. Libman believed that one could not say that a bacillus which when isolated did not agglutinate with a specific serum was not a dysentery bacillus. One ought to make several tests; for it might be possible that such an organism might react after it had been cultivated outside of the body. He and others had had such experience with the typhoid bacillus. Dr. Libman asked Dr. Duval what his experience had been with the thread reaction; whether he had found it more or less specific than clump reactions.

Dr. Duval replied that his bacillus did not differ from the true Shiga type, except fermenting in mannite. The kind of reaction (end-to-end or tight clump) depended on the media and serum employed. Sometimes a fresh Shiga culture would give an end-to-end reaction and sometimes the Harris culture would give it. No hard and fast rule could be laid down.

Dr. Park said that in most of the diarrheas with profuse serous discharge bacteria were very abundant. In a dysenteric stool from a man working on Riker's Island, which was almost pure blood, very few bacteria developed.

Dr. S. J. Meltzer wanted to know whether watery stools had ever been examined for their bactericidal effect. Such stools, being transudates from the blood might possess acquired bactericidal power, specific for the organism which is the primary cause of the dysentery. Hence the absence of just this group of bacteria in the watery stools.

Dr. P. H. Hiss said that he had noticed a tendency in the papers read that evening and during the discussion to refer to the dysentery bacilli as of "acid" and "alkali" types, and to speak of "acid" and "alkalin" dysenteries. He thought that it was not scientifically correct to divide these organisms into "acid" and "alkali" types, as both of these types produced acid freely if in the presence of a suitable sugar. So far as he knew, in the presence of proteid and nitrogenous food alone, one of these types would give rise to as much, or as little, alkali as the other. It did not, therefore, seem to him correct to speak of an "alkali" producing type, simply because that type did not ferment as many kinds of carbohydrates as the so-called "acid" type. Dr. Park had suggested the name "para-dysentery" for the group composing the active fermenters or "acid" type, in order to distinguish it from the true *Bacillus dysenteriæ* of Shiga. These active fermenters had already been shown to be divisible into two fairly distinct types not only by their fermentation reactions, but by differences in agglutination. In view of these facts and our as yet really limited knowledge of these organisms, and their relation to dysenteries and diarrheas, it seemed early to attempt to name them or at least to mass them indiscriminately under one group name. At present we knew only something of their action on carbohydrates, practically nothing of their action on proteid or other nitrogenous food materials, and the further study which was necessary might lead us to a different conception of the members of the group.

Dr. Park said that prefixing the term "para-" simply separated that group from the Shiga variety, and did not necessarily limit the mannite-fermenting bacilli to a definite group, but left that to the future to decide. Most of the bacilli so far obtained were, however, in most characteristics, similar. Some of the German bacteriologists had used the term "pseudo-dysentery" for this group, but this was misleading. He agreed fully with Dr. Hiss, but said that the terms "acid" and "alkali" were simply terms of convenience, and referred to the appearance of the differentiating litmus mannite medium. He would like to know how Dr. Hiss would designate these organisms.

Dr. Hiss said that he considered it a mistake to adopt short and convenient terms when they were not scientifically correct, and that it would be better to speak of these organisms as mannite fermenters and non-mannite fermenters.

Dr. Herman Schwartz asked Dr. Duval whether he found bacilli in watery stools where no blood or mucus was present, or in true summer diarrhea, and was answered affirmatively.

Dr. Park said that the term "dysentery" was a distinctly clinical term. It referred to an acute infectious disease lasting from one to four weeks, having the distinguishing symptoms of abdominal pain, tenesmus, and frequent stools of blood and mucus with more or less feces and serous fluid. These cases were rarely seen in New York City, but occurred by hundreds in

country towns. It was impossible to examine the mucous membrane of the intestines in these cases during life. From the location of the pain and the character of the stools it was, however, possible to determine pretty accurately the extent of colon and small intestine involved and the character of the inflammation.

Dr. L. Emmett Holt did not think we were much helped in the classification of intestinal diseases by the researches reported. For instance, such cases of colitis as were found by autopsy to have large quantities of pseudomembrane had always been included in the group, dysentery, but were frequently without blood and mucus as clinical symptoms. To exclude them from the classification on this basis seemed irrational.

Dr. Park said that the uncomplicated cases of dysentery outside of hospitals usually recovered in this climate, and when fatal an autopsy could rarely be obtained. The autopsy findings in some atypical hospital cases due to the mannite-fermenting type in which extensive membrane had been present, had been carefully examined by Dr. Howland, whose report had just been read. It was very difficult to determine in these cases what portion of the lesions should be ascribed to the poison of the dysentery bacillus. In these cases no true Shiga dysentery bacilli had been found.

He said that it was a recognized fact that different micro-organisms produced inflammations resembling each other in many respects. Thus, we had syphilitic inflammations of the pharyngeal mucous membrane and also lesions due to Vincent's bacillus, which closely resembled in appearance the lesions of diphtheria. We also had the slighter lesions due to the streptococci. Notwithstanding these facts no one doubted the value of recognizing the most important and frequent infection of this region as diphtheria. The same reasons existed for the term "acute dysentery."

Dr. George P. Biggs said that the term "dysentery" referred simply to a group of clinical symptoms and had no place in pathology.

Dr. David Bovaird said that there were three distinct points of interest in the discussion: (1) He could not tell from pathological lesions which cases were Shiga bacillus infections or were associated with other bacilli. (2) He could not tell from clinical picture which cases were produced by Shiga bacillus and which were not. (3) Nor was the agglutination test alone reliable evidence as to which cases are produced by the Shiga bacilli. Practical workers had no other means than the bacteriological for recognizing these cases. The physician must wait for further information from bacteriologists before making definite distinctions either as to the bacteriological association of these cases, or to the prospect of treatment with specific serum.

Dr. Park said he could judge in what cases dysentery bacilli would be found, as well as he could where typhoid bacilli or diphtheria bacilli would be met with. They would always be found readily in cases of epidemic dysentery and usually wherever acute diarrhea was accompanied by mucus and blood. In cholera infantum they would not be found.

Dr. Schwartz thought it was going too far to say that summer diarrhea was due to the dysentery bacillus. When blood or mucus preponderated the bacilli were found without difficulty; but in commoner cases of summer diarrhea, even if a few colonies were found, one could not say that the dysentery bacillus was the cause of the watery stools.

Dr. Duval wanted to know if with the bacilli in one of the eight colonies from such a case there was reaction with that patient's blood 1 to 50, 1 to 500, 1 to 1,000, and all other organisms in the intestinal tract were not agglutinated, what importance would Dr. Schwartz attach to that finding.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON ORTHOPEDIC SURGERY.

Stated Meeting, held November 20, 1903.

The President, T. Halsted Myers, M.D., in the Chair.

Dislocation of the Humerus Complicating Obstetrical Paralysis.—Dr. R. Whitman presented two cases illustrating the treatment of this affection. The method which he had employed was similar to that of the Lorenz reduction at the hip-joint. This was preliminary forcible manipulation to stretch the contracted parts and reduction by overextension of the elevated arm which was then slowly forced downward to the side of the body and fixed by means of a plaster bandage. This was retained for several weeks or months and on its removal manipulation and muscle training were if possible begun. In some instances it might not be possible to reduce the displacement at the first attempt. Cases of this character were sometimes classed as true congenital displacement or misplacement of the humerus, but they were in most instances secondary subluxations induced by the habitual attitude of abduction and pronation characteristic of obstetrical paralysis. In certain cases repair of the injury to the nerve trunks had taken place and yet the function was disabled because of the subluxation of the head of the humerus backward which made supination of the forearm impossible. In such instances the correction of deformity might accomplish a practical cure. In the majority of cases of this character the paralysis was irremediable, yet even in this class the reduction of the displacement improved the attitude and function of the arm. The first case was that of a girl, eight years of age, operated upon three months before. The reduction was successful, the attitude was normal, there was a fair range of motion in the joint and apparently no paralysis of the muscles. In this case functional cure was probable. The second case was that of a boy, eleven years of age. The extent of the original injury to the nerves was indicated by the atrophy and loss of growth of the extremity. In this case reduction was difficult, requiring several sittings. Now, about one year after the operation, the head of the humerus appeared to be firmly fixed in its proper position. Although there was but little power of voluntary motion in the joint, the appearance and the function of the limb had been considerably improved by the reduction of the displacement.

Coxa Vara.—Dr. Whitman also presented a case illustrating the operative treatment of coxa vara. The patient was a girl, ten years of age, who had limped for two years and had recently complained of much pain and discomfort. The treatment consisted in the removal of a sufficient wedge of bone from the base of the trochanter to permit the restoration of the normal angle of the femoral neck. A thin layer of bone at the extremity of the wedge formed a hinge, the two opposing surfaces being brought into contact by abducting the limb. In this maneuver the trochanter being fixed by contact with the upper border of the acetabulum further abduction of the shaft closed the wedge-shaped opening. In this attitude the limb was fixed by means of a plaster bandage until repair was complete. In the patient presented but slight trace of the former disability was evident although the operation had been performed in September, the bandage having been removed about three weeks before this meeting.

Dr. V. P. Gibney in the discussion of Dr. Whitman's second case, said that he remembered seeing the operation. He thought at the time, that the stretching had not been done sufficiently well to get the arm far enough back to make the re-position and reduction of the arm where it belonged, absolutely sure. The boy had been

kept at the hospital for a long time. After the removal of the plaster it seemed to the speaker, he had had a little better range of motion than at present. He said all were familiar with the cases presented by the late Dr. Phelps. The open method had been adopted, but he could not quite see how a perfect result could be obtained until the parts could be held in better position and for a longer time than by the present treatment. Dr. Gibney thought Dr. Whitman was working in the right direction, and that by and by a perfect method of treatment for this deformity would be evolved.

Dr. Whitman said that this case was complicated with paralysis and could not be discussed as a simple dislocation.

Dr. Gibney said such cases were called obstetrical paralyses. Later on, other parts were involved. In the case under discussion the head of the bone could be distinctly felt back of the shoulder joint. It was simply a question of terms; many called the condition congenital dislocation. Whether the paralysis caused the dislocation, he did not know. He was as yet unconvinced that it is a true paralysis.

Dr. H. L. Taylor said he judged that these affections were secondary to obstetrical palsy, and should be reduced by a system analogous to that employed in congenital hip dislocation. In this case the shoulder seemed to be in good position. There was subluxation of the end of the clavicle, which was not important, though quite prominent. There is limited use, but, as Dr. Whitman had said, it must be remembered that the arms were more or less palsied, and the getting of the head of the humerus into its socket and keeping it there was certainly an improvement in the child's condition, and an improvement over the cutting operation for getting the arm into position.

Dr. Lesynsky said that he had been very much interested in the case several years ago when he had seen a number of these children. The condition was then ascribed to injury to the brachial plexus, fifth and sixth roots, paralysis terminating in luxation of the shoulder-joint. If the muscles did not undergo regeneration under treatment or spontaneously, there was permanent disability. The speaker was glad to see such good results obtained by manipulation without any other operative interference.

Dr. L. Pierce Clark said that he was very sorry that he could not know more definitely about the cause of this condition, particularly in regard to birth. He thought that these conditions figured as obstetrical palsy due to lesion by stretching the fifth and sixth cervical roots, although there often was injury to other roots. He had palpated the plexus in both cases. He could detect the site of lesion in both. He thought the range of paralysis in the boy was greater in the brachial plexus. He thought other roots could be found damaged far down in the plexus behind the clavicle. In obstetrical palsies the deltoid suffered most because it was most completely supplied by the fifth and sixth cervical roots; then the biceps and supinator brevis. Subluxation of the shoulder was secondary to the paralysis; the atrophy in the deltoid corresponding to the atrophy in the shoulder joint. It is a painful condition, and while operation may enable the muscle to work at much better leverage, nerve section and suture must be done. Kennedy had done the most successful operations of this character recently. The speaker had, during the past year, looked up a series of cases on which Dr. Alfred Taylor had been doing nerve section and suture. The cases had been doing all that could be expected, but much time was required for reparative processes, and they were not ready for presentation, but would be in four or five months. In such operative work as that presented by Dr. Whitman, this operation would not influence the pronation of the hand, because that was done by the supinator brevis. This attitude of marked internal rotation was present, not because the pronators were weak, but because the external rotators had been paralyzed. As the condition gradually improved, the elbow came down to the side and contractions took place. Last in the process was pronation of the hand. He had never seen cases of obstetrical paralysis in which this lesion had been marked, in which there had been entire recovery of supination of the hand under any form of treatment. He said that massage and passive movements were disregarded by neurologists, as the patients never carried out the movements under their own volition. After operation, a series of educational principles had to be carried out, and afterward cerebral training was given. Representations of movements must take their position in the brain. The brain, and not the muscles, must be educated. The speaker thought Kennedy's brachial plexus operations more successful than others, because he applied the cerebral education principle.

The chairman, Dr. Myers, wished to know in how severe cases of these paralyses Dr. Whitman applied reduction. Was it not possible, in some cases, to produce immobilization in this way at the shoulder joint, and so secure more motion of the arm through the less paralyzed muscles acting on the scapula?

Dr. Whitman said he had studied the Hospital Reports carefully in thirty or more cases of obstetrical palsy, and had seen the patients come in, all having the well-known attitude belonging to this condition. There was at first no subluxation present at all; it was the effect of the continued pronation and abduction. For that reason, Dr. Whitman thought passive motions of great importance in order to prevent such conditions as he had shown. Whether there was paralysis or not he thought it better to have the head of the bone in the normal position. Then there was power to supinate the arm. In the case of the little girl, Dr. Whitman thought there would be recovery of function, because the injury to the brachial plexus had been slight, but in the other case there would never be recovery, as the injury had been great, as shown by the atrophy of the muscles. There was complete anchylosis of the shoulder joint. It was better with complete anchylosis to have the head of the bone in its proper place, which was all he had attempted to show. In former times this bad attitude had been allowed to persist, now it was remedied. It was better to do this forcible operation in one, two or three sittings, thoroughly stretching the parts, than to make a section posteriorly without stretching. Whether or not they could be successfully replaced, and whether they would stay in place, he did not know. He did not present them as favorable cases. Thus far the bone had remained in position, and function was very decidedly improved.

Dr. Gibney asked Dr. Whitman whether he did not think it would be better to do an excision of the head of the bone in the boy's case, in view of the importance of having it in its proper place, thus giving the patient a more flexible joint.

Dr. Whitman replied that it seemed to him that the atrophy of the scapula and shoulder muscles was very great. The arm was considerably shorter than the other side. He thought excision would be of little use if there were not sufficient muscle to move the arm about. It was a difficult case at the time of operation, and he was obliged to attempt to replace the bone in two sittings. Had been perfectly contented to have complete anchylosis because the attitude was much better. The boy now had partial supination, he had none before. The

boy had had no treatment after the operation, whatever, except what the mother had been able to give him, in the way of massage, etc. He thought in the reduction of all deformity of long-standing, the operator should not attempt to do what was required in less than two or three sittings.

Dr. V. P. Gibney said that he wished to report the case of a boy, ten years of age, with marked flexion deformity and subluxation of the head of the tibia, presenting a long cicatrix below the patella. He thought it, on first sight, a case of exsection of the joint in early life, and the usual recurrence of deformity that takes place in those cases. He wished it, however, placed on record as malarial synovitis of the knee, or synovitis occurring during malarial attacks, and wanted to bring up the question as to whether it was osteitis or pure malarial synovitis. Dr. Whitman had operated on the boy last Tuesday, doing osteotomy above the condyles. The leg was now quite straight. Dr. Gibney showed a radiograph of the limb and wished to call attention to the curving of the lower end of the femur which takes place in tuberculous lesions of the bone, and have it compared with the sound limb. The history of the case, in brief, was as follows: Boy, ten years of age; entered Bellevue November 22, 1900. Family history negative, save for malaria, which attacked all the members of the family just before the boy's admission to the hospital. Plasmodium had been found in the blood. At the end of November, 1900, the boy began to have chills followed by fever and sweating. This occurred every other day. He would have twenty chills, accompanied by nausea, vomiting and diarrhea. Always severe frontal headache. No epistaxis. Looked well nourished but slightly anemic. Heart normal, slightly irregular. Temperature 102.2 to 105° F. On December 7 was in good condition and was discharged. On December 9, was re-admitted to hospital, suffering from relapse. Arsenic was given. December 11, Warburg's tincture was given. Temperature dropped. Tenderness in right knee and elbow. These joints swollen and stiff. Soda bicarbonate and salicin were given. December 14, very painful. Salicin continued. December 26, condition unchanged. Tenderness most marked at inner aspect of tibia. Inguinal glands swollen. Stools numerous, indication of colitis, etc. January 1, 1901, joint less tender, stools less numerous. No blood, no mucus. January 8, joint still painful. Marked contraction of the leg. Massage and passive motion given daily. Stools fewer, and more normal in character. January 11, complained of pain in joint. January 18, transferred to surgical division. January 20, joint opened, and cartilage found diseased. Scraped away completely, bones found intact. The quadriceps extensor was cut out to get the patella out of the way. Suture by chromacized gut. Skin suture with silk. Plaster of Paris applied from hip to toes. January 31, patient in good condition.

Specimen found to be the seat of chronic inflammation. No tuberculosis. March 4, removed plaster. March 5, temperature 104° F. Plasmodium found. March 7, malarial chill 11 A.M., followed by fever 104.8° F. Sweat. Re-applied plaster. March 25, removed plaster, applied splint. Slight flexion in knee-joint. April 5, goes about ward pretty well. Runs with slight limp. May 19, discharged. Admitted to Hospital for Ruptured and Crippled November 5, 1903, with deformity described by Dr. Gibney, and shown by radiograph.

Knock-knee.—Dr. Gibney also described this case. The patient was a large Swedish woman, thirty-two years of age. The knock-knee was very marked. Very little history could be obtained. On the inner side of the knee what seemed to be a very hard mass appeared, not distinctly outlined. It was suggestive of osteosarcoma, but the diagnosis was not positive and an X-ray was taken. This showed a much elongated internal condyle, and cuneiform osteotomy was done and the limb was brought around in perfect position without difficulty.

Dr. Whitman said that he thought the bending of the lower extremity at the knee not uncommon in flexion deformity so often seen.

Dr. Taylor related the case of an Italian with obliquity of the pelvis. The man complained of backache, and on examination marked pelvic obliquity was found. Short legs were not uncommon but the trouble with this man was that one leg was longer than the other, which was normal. The condition was due to an old osteitis of the tibia. One leg was one-half inch longer than the other.

Dr. Napier said that unfortunately the patient of whom he would speak was beyond presentation. The case was one he presented at the April meeting of the Section. A boy of fourteen years, who had lateral curvature with some rotation, beginning Pott's paraplegia. After the above meeting, the boy was ordered to bed. At that time the paralysis had somewhat increased. On Tuesday, April 21, a plaster jacket was applied in suspension. The paralysis had then extended along the legs, and was almost complete. There was nearly complete loss of sensation, loss of bladder control and no movement of the bowels. Temperature normal. The boy was kept in bed. April 22 in the morning, nearly complete paralysis, loss of all power in the arms, very little sensation. Involuntary evacuations, temperature normal. During the afternoon, the breathing became difficult. On April 22 at 5 o'clock, he died of paralysis, apparently, of respiration. Dr. Napier reached the house a short time after the boy died. He presumed this case was one of ascending myelitis. He wondered whether the contents of the abscess might not have entered the spinal cord, causing the rapid paralysis.

Impairment of Growth Due to Cerebral Lesion.—Dr. Witmer presented a young woman, seventeen years of age, paralyzed since birth. No instruments were used, but the birth was tedious. Injured arm three inches shorter and forearm one and three-fourths inches less in greatest girth than the other. Face and chest on injured side much smaller than the other side. Possibly a marked case of so-called birth palsy. If so, involvement came from fifth and sixth cervical because the entire arm was affected, the extensors more so than the flexors. Electrical reactions normal. Sensation normal. The speaker thought because of extreme failure of growth and the fact that reactions to electricity were normal, the paralysis was of the cerebellar or spastic type, rather than of the spinal type. Legs normal. He agreed with Dr. Clark that it was the education of the muscles that was of benefit in these cases.

Dr. Whitman, in the discussion, said in that case there was partial subluxation of the humerus. The patient had power in muscles and with the head of the bone in its normal position, she would have the power of supination. In ordinary cases of obstetrical paralysis there was marked atrophy of all of the upper muscles, it was not limited to injury of the cords of the brachial plexus, and patients often were left with little power in the arm. He thought subluxation required treatment.

Dr. Clark said that some three weeks ago he saw Dr. Witmer's case, to decide upon the feasibility of operation. He noticed the marked facial asymmetry. Since then he has re-examined several other cases of Erb's palsy to see if the non-development of the face was uniformly present on the side of the arm lesion. He has found it present in all where the patient is suffi-

ciently old to give an asymmetry which might come from asymmetric growth. He explained this new condition in Erb's palsy upon the disuse theory: The patient in failing to use the paralyzed arm and shoulder fails also to give the normal impulse to growth in facial muscles and bone. The side of the face on the side of the lesion remains behind in normal growth. In comparing the symmetry of the two sides in unilateral palsy lesions, such as Erb's palsy, a hypertrophied standard is employed on the sound side, just as in anterior poliomyelitis and infantile cerebral hemiplegia, owing to the excess development of the sound side through extraordinary labor thrown upon that side. The close association of the cerebral areas of muscular movements for the face, arm and hand in the motor region of the brain accounts for the face not developing when the arm remains paralyzed from birth—it is essentially a lack of associated voluntary muscular efforts. If on the contrary these efforts should be prolonged over a considerable period of time the face might not only show no non-development, but it might appear normal or even hypertrophied, as the partial palsy would serve to call out more persistent forced voluntary effort, thus calling into play the accessory associated movements in adjacent brain areas functionally allied, such as those for the face, when the arm is being used. During the past year Dr. Alfred Taylor has performed for Dr. Clark a series of nerve section and suture operations upon brachial plexus lesions of so-called Duchenne Erb or birth-palsy type, results of which will be reported later with observations upon the cause, pathology and treatment of the conditions. He can see no good or necessary reason to invoke two nerve lesions to account for these cases. The characteristic symptoms of Erb's palsy, together with palpation of the site of the lesion at Erb's point ought to make certain the diagnosis of birth palsy. Certainly he should not diagnose a cerebral lesion here, neither capsular nor surface hemorrhage, where there are no convulsions, no facial immobility, no spasm or spasticity of muscles, no incoordination nor spontaneous uncontrolled movements, and where the weakness is most pronounced in the deltoid and biceps and not distally as in cerebral palsy, also where there has been no marked increase in the reflex of the facial muscles nor in any of the paralyzed parts. Finally, it must be borne in mind that the labor difficulty causing the two affections is different. In birth palsy as in this case one has imperfect rotation of the trunk; the head is in extreme rotation, the shoulder is caught under the symphysis and the tension and stretching of the fifth and sixth cervical spinal roots results in an attempt to force the delivery by pulling on the head. In cerebral birth palsies the difficulty arises in the delivery of the head; it is compressed and the labor is markedly prolonged and much asphyxia results.

Dr. Witmer said the site of violence to the head might be remote from the location of the cerebral injury. He thought it was not unusual to find hemorrhage of the spinal cord in those cases of birth palsy.

Dr. Elliott exhibited a spinal column from a patient who had had the disease described by Marie. The patient was first seen by Dr. Elliott in 1897; was then examined under anesthesia for diagnosis. He was suffering from acute pain in the coxofemoral joint, with great hyperalgesia. Could not bear the weight of the bedclothes. The hip-joint was found to be anchylosed. The patient was a Russian, thirty-six years old, admitted to Presbyterian Hospital for pain in knee. Came to this country to avoid army service. Had been examined fifteen years previous, and found qualified as to size, for a soldier. On admission to the hospital support and extension were applied to the knee, and the symptoms subsided. In one and a half years he returned with pain in left coxofemoral joint which was anchylosed, gradually extending to the lower part of the spinal column, extending to dorsal and cervical regions, involving right hip, and subsequently the shoulders to a much less degree. Early in history he developed pulmonary tuberculosis. The bacilli were found, and that disease progressed hand in hand with the other. He died from tuberculosis about two months ago. The specimen was almost typical of that first described by Marie in *Revue de Médécine*, 1897. He described two cases almost simultaneously with Bernhardt, almost identical in involvement of the larger joints and the hip, all the small joints remaining intact. The curvature was gradual, the symptoms of pain and hyperalgesia subsided and the man then suffered only from his anchylosed position. Specimen exhibited and anchylosed parts pointed out.

Dr. Taylor, in the discussion, said that he had seen many specimens of stiff spines of this general character, but in those he had seen, the ossification was usually more marked on the anterior ligament, and in the lateral bands rather than the median and often on one side more than the other. Cases of spinal stiffness due to ossification of ligaments or to osteo-arthritis were exceedingly common, but it was only recently that they had begun to be recognized. In Marie's cases the large joints were involved, but there might be osteo-arthritis of the spine not involving the large joints and there might be osteo-arthritis of the large joints without involving the spine. Sometimes the spine and large joints were affected in succession. Sometimes there was deformity, sometimes not. The result depended largely on the rapidity of the process. If ossification took place rapidly, deformity was not so likely to occur; if slowly, there was equal round-back on both sides, or lateral spinal curvatures also.

Dr. Elliott said in reply to Dr. Taylor's remarks, that in all cases he had seen described under this type the anterior ligaments had escaped, as in this case. There seemed to be two or three different types of stiff spines, and he thought the variety in which the anterior ligaments were involved, was the stiff spine of ordinary arthritis deformans, where not only the large, but small joints were involved, and there was throwing out of deposit. Here there was no such tendency.

JOHNS HOPKINS MEDICAL SOCIETY.

Stated Meeting, held November 16, 1903.

Demonstration of Medical Cases.—Dr. Osler introduced the first patient, who was a man with aneurism causing a protruding tumor in the neck. There was a luetic, but no alcoholic history. The onset occurred two years ago, with pain in the shoulder, swelling of the feet and gradual development of the usual symptoms. Distal ligation of the right carotid was done and the tumor immediately increased in size—a feature quite unique in medical literature. The second case was a woman who showed peculiar mottling of the back and hands. The disease appeared after a mental shock, began with pain and numbness in the foot and was characterized by areas of local cyanosis alternating with livid spots.

Case of Generalized Neuritis from Lead.—This was Dr. Thomas' subject. The patient, a man of forty-six years, gave a marked alcoholic history, but the definite onset of his illness had occurred about two and a half weeks after entering an enamel works. There was marked delirium at onset, increasing weakness and some pain in right shoulder. Distinct blue lines in the gums, complete paralysis below the shoulder, ab-

sence of reflexes, slight dulness of sensation at the periphery, some muscle tenderness, granular degeneration of the red blood corpuscles and an irregular temperature were the features of the case. General lead palsy is a rare condition, only about 12 cases having been reported in the literature.

Dr. Hurd said that in lead paralysis the muscles most used are the ones most affected. In this patient alcohol cannot be eliminated as an etiological factor.

Case of Blastomycetic Dermatitis.—This subject was introduced by Dr. Gilchrist, who said that the disease began seven months ago as a pimple on the right wrist. This changed to a nodule, broke down and formed a papilloma. Later, lesions appeared on the thumb, thigh and face. Pus squeezed from the lesion gave a pure culture of the blastomycelium. This disease, of which there are about 50 cases in the American literature, must be diagnosed from tuberculosis and lues. The clinical features, with a microscopic examination of the pus, make the distinction possible. Treatment consists of potassium iodide internally, curettage and the use of the X-ray.

Metabolism in Pregnancy.—Dr. Slemons read this paper, and reported the results of studies made on four women whose metabolism was followed for about thirty-nine days. The diet was carefully regulated and weighed; all the excreta (including urine, lochia and milk) were carefuly measured, and daily estimates were made of the amount of urine excreted and the total nitrogen and ammonia output. The series showed a definite diuresis just before and just after delivery. All the cases showed a tendency of the mother to store nitrogen during pregnancy and the patient who bore live twins emphasized this tendency. The series also showed that during pregnancy there is a tendency for storing up ingested fluid. The ammonia excretion shows definitely that a fetus in utero causes changes in the mother's metabolism. It drops to normal after delivery and tends to become normal when the fetus dies in the womb. Relative suppression of renal activity explains the changes in the amount of excreted urine during and following labor. The diminution in nitrogen output is probably due to impairment of the kidney cells. The high ammonia output at the time of delivery cannot yet be explained. During the puerperium all the patients in Dr. Slemons' series showed a definite diuresis, except the one who bore dead twins. There was a rise in the nitrogen output, usually beginning about the second day of the puerperium and probably due to regressive changes in the mother. The ammonia fell gradually to normal. The series showed that metabolism tends to assume a non-pregnant type when the fetus dies in utero.

Dr. Emerson said that Dr. Slemons' report is particularly valuable because, in spite of the importance of an accurate knowledge of metabolism, no really good observations exist on which to base conclusions.

BOOK REVIEWS.

MANUAL OF OPERATIVE SURGERY. By SIR FREDERICK TREVES, Bart., K.C.V.O., C.B., LL.D., A.R.C.S., Sergeant Surgeon in Ordinary to H.M. the King, etc. New Edition. Revised by the author and JONATHAN HUTCHINSON, Jr., F.R.C.S., Surgeon to the London Hospital, etc. In two volumes, Vol. I. Lea Brothers & Co., Philadelphia and New York.

THE appearance of this well-known work in revised form will be gratifying to those who have learned to know and admire its previous edition. Considerable changes have occurred in surgical thought and action even in the brief time since this manual first appeared, and the revision has been sufficiently thoroughgoing to make it in its present shape a vital contribution to the literature of to-day. The author's choice of a coadjutor has been most happy, and the addition of Mr. Hutchinson's name to the title page has but increased the dignity and authority of the book.

This volume embraces the general principles of operative surgery, and the operations of general surgery, classed under the headings of the ligature of arteries, operations on nerves, amputations, operations on bones and joints and tenotomy. The two introductory chapters on "The Patient" and "The Operator" are masterpieces, and could be read with profit by every one practicing or expecting to practice the art of surgery. The *x* of the personal equation, the unknown quantity, which, in the patient so profoundly, and in the operator to an appreciable extent, modifies the results of even lesser operative procedures, is discussed with a breadth of knowledge and distinction of manner seldom equaled in modern medical writing. An interesting description of the operating room furniture, methods, etc., of the London Hospital, with numerous photographs, details the embodiment of aseptic principles, as now practised in the land that gave them birth. In this connection it is of interest to note that the author does not use gloves in routine work on clean cases. The remainder of the volume treats of the classical operations in a spirited and attractive manner that should make their study less irksome to students. The illustrations are, for the most part, clear and instructive, but we note with pain that a number of antique cuts, representing coat-sleeved and cuffed hands operating with wooden-handled scalpels, relics of a bygone era in the annals of surgery, have been allowed to remain, and we trust that a succeeding edition will see these anachronistic blemishes deleted from the pages of an otherwise perfect book.

HANDBOOK OF OBSTETRIC NURSING, FOR NURSES, STUDENTS AND MOTHERS. Comprising the Course of Instruction in Obstetric Nursing Given to the Pupils of the Training School for Nurses Connected with the Woman's Hospital of Philadelphia. By ANNA M. FULLERTON, M.D., formerly Obstetrician, Gynecologist and Surgeon to the Woman's Hospital of Philadelphia; Physician-in-Charge and Superintendent of its Nurse School, and Clinical Professor of Gynecology in the Woman's Medical College of Pennsylvania; Late Lecturer on Surgery and Operative Midwifery in the North India School of Medicine for Women. Sixth revised edition. Illustrated. P. Blakiston's Son & Co., Philadelphia.

THIS cleverly written little book has again been brought in line with obstetrical teaching of to-day, and is intended to instruct nurses in all the details which they are supposed to direct during pregnancy and the puerperal stage, and also covers the instruction in regard to the various emergencies which are so liable to occur in these cases while the physician is absent. It is a very handy edition and although not so complete and full in its information as those who are making this subject a special study might desire, yet it covers the subject sufficiently well for any ordinary obstetrical nurse and contains much information which a mother might read with pleasure and value to herself.

ADENOMYOME DER UTERUS. Von THOMAS S. CULLEN, Hülfsprofessor der Gynäkologie in der Johns Hopkins Universität, Baltimore, Md., Verlag von August Hirschwald, Berlin.

IN this admirable "Arbeit," which is a part of the Festschrift dedicated to Orth on the twenty-fifth anni-

versary of his professorate, the author gives an excellent discussion of the anatomical and clinical features of a considerable number of tumors of this type which have come under his observation. They are divided into (1) adenomyomata, with relative preservation of the uterine form; (2) subperitoneal and intraligamentous adenomyomata, and (3) submucous adenomyomata. They form a distinct class of uterine growths, in which detached portions of practically normal uterine mucosa are found in the midst of areas of myomatous hyperplasia. They occur both in the body and cervix; the submucous variety being the least frequently observed. Attempts to establish an etiological relationship between conditions in the adnexa and this type of new growth have failed. The clinical history does not essentially differ from that of simple, myoma and the physical examination also is usually not characteristic, except that a tendency to the early formation of adhesions is noted. The prognosis is good in so far that adenomyomata are not malignant growths, but a case is described in which carcinomatous degeneration of the glands of the mucosa incarcerated in a growth of this description occurred, and the two conditions not infrequently exist independently in the same uterus. The treatment consists in hysterectomy, as myomectomy is rendered impossible through the diffuse nature of the growth. The dissertation is a scholarly piece of work in harmony with the author's previous pathological studies and is representative of the work done in his university.

THE MEDICAL NEWS VISITING LIST FOR 1904. Lea Brothers & Co., Philadelphia and New York.

EIGHTEEN years of experience has resulted in the publication of a visiting list which comes as near meeting all the requirements of the physician's daily record and reference book as even the most exacting could demand. It is issued in four styles to suit the needs of all physicians; weekly (dated for 30 patients); monthly (undated for 120 patients per month); perpetual (undated, for 30 patients weekly per year) and 60 patients (undated for 60 patients weekly per year). It is a pocket-sized, wallet-shaped book containing a large amount of most useful information to which the practitioner so frequently finds it necessary to refer at the bedside. Various tables, instructions for examination of urine, incompatibles, extensive table of doses, directions for artificial respiration and a list of diseases and their remedies are among the many valuable things which are of easy access in this little book. It is well printed and bound in flexible leather. It offers a convenient method for easily and accurately keeping a physician's daily accounts.

ENCYCLOPEDIA MEDICA. Under the general editorship of CHALMERS WATSON, M.D., M.R.C.P.E. Vol. VII, Liver to Menopause. Vol. VIII, Menstruation to Orbit. Longmans, Green & Co., New York.

THE Encyclopedia Medica we have had occasion to commend to our readers very highly, and in the two volumes here under consideration, we are pleased to note some more than usually interesting and profitable articles. Furthermore, the illustrations which were fewer in the earlier numbers, are now quite ample.

Of particular interest in the present number is the article on Tuberculosis of the Lungs, written by Dr. R. W. Philip. It is a clear, concise and yet comprehensive presentation of the story. Dr. D. C. Rees gives a singularly attractive discussion of Malaria, presenting a very complete summary of our modern knowledge concerning this disease.

The Physiology and Pathology of the Lymphatic System is well presented, the literature up to the time of the writing of the article being fully discussed. Diseases of the Mammary Gland are very fully discussed, as well as Maternal Impressions and Malingering. The short chapter on the History of Medicine is a very able presentation.

Vol. VIII contains a number of thorough articles; among these may be mentioned those on the Disorders of Menstruation, Mental Deficiency, Micro-organisms, Milk, Education of the Mind, Morphinomania, Diseases of Muscles, Nephritis, Neurasthenia, Occupation Neuroses and Obesity. This latter chapter, while short, is very practical.

Certainly this series is deserving of the highest commendation and the handiness of the volumes, good mechanical execution, as well as the intrinsic quality of the articles contributed, all combine to make this Encyclopedia a valuable one and one worthy of representation in every practitioner's library.

THE AMERICAN ILLUSTRATED MEDICAL DICTIONARY. By W. A. NEWMAN DORLAND, A.M., M.D., editor of the "American Pocket Medical Dictionary." W. B. Saunders & Co., Philadelphia, New York and London.

AS THERE are a number of medical dictionaries on the market it must be a source of gratification to the author and publisher that a third edition of Dorland's Medical Dictionary should be called for within a few years after its original publication. As in previous editions, the book is excellently printed and very practically bound in full flexible leather. The revision for the present edition led to the introduction of a large number of new terms, and there is evident a commendable purpose to keep the book thoroughly up-to-date. Medical lexicography, an almost uncultivated field twenty-five years ago, in America, has become in recent years one of the fruitful departments of our medical literature.

CLINICAL PATHOLOGY OF THE BLOOD. A Treatise on the General Principles and Special Applications of Hematology. By JAMES EWING, A.M., M.D., Professor of Pathology in Cornell University Medical College, New York City. Second Edition, Revised and Enlarged. Illustrated with 43 Engravings and 18 Colored Plates drawn by the author. Lea Brothers & Co., New York and Philadelphia.

DR. EWING'S book has proved itself to be one of the most practical manuals on the important subject which it treats. In the consultation of the work there is the constant feeling that nothing is added for the sake of appearance nor for padding, but that all phases of modern hematology are treated from the standpoint of a practical pathologist, whose aim has been to help the clinician. A well-directed and determined effort has evidently been made to have the book thoroughly up to date, and for this purpose some paragraphs with regard to the bacteriology of the blood in pneumonia, sleeping sickness, granular degeneration of red cells, and leukanemia have been added while the book was going through the press. In order to bring the present edition up to the level of recent progress, references have been made to about four hundred articles or monographs. For those who are interested in special features of pathology, or who are looking up questions in detail, the very complete bibliography cannot fail to be of great service.

In general, it may be said that this is one of the recent American medical publications that gives assurance that at last we are in our medical text-books attaining the standard set for us by great European authorities.